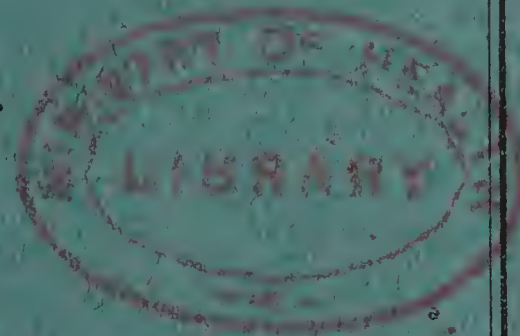


HEALTH
12 MAY 42
C.R.



CITY AND COUNTY OF NEWCASTLE UPON TYNE

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

ON THE

Sanitary Condition of the City

DURING THE YEAR

1940



CITY AND COUNTY OF NEWCASTLE UPON TYNE

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

ON THE

Sanitary Condition of the City

DURING THE YEAR

1940



Printed by
CHRISTIE, MALCOLM, LTD.
CHARLOTTE SQUARE, NEWCASTLE UPON TYNE

Members of Council who served on the HEALTH COMMITTEE

The Lord Mayor (Councillor A. D. RUSSELL)
 Alderman WALTER THOMPSON, J.P., Chairman
 Alderman DAVID ADAMS, J.P., M.P., Vice-Chairman
 Alderman J. CHAPMAN Alderman J. E. SCANLAN, O.B.E., J.P.
 Councillors CATHERINE A. AULD, J.P., A. E. BEDSON, VIOLET H. GRANTHAM,
 CATH. A. LOCKE, J.P., H. MOAT, E. G. KING, J. PEARSON, J.P., R. M.
 ROWE, T. SWEENEY & EMILIE F. DAVISON

MATERNITY & CHILD WELFARE COMMITTEE

*Alderman JOHN CHAPMAN, Chairman
 *Councillor CATHERINE A. AULD, J.P., Vice-Chairman
 *Alderman DAVID ADAMS, J.P., M.P. *Alderman WALTER THOMPSON, J.P.
 *Councillors VIOLET H. GRANTHAM, *CATH. A. LOCKE, J.P., *J. PEARSON, J.P.,
 *EMILIE F. DAVISON, ‡ JEANIE L. GIBBIN, O.B.E., J.P., ‡ FRANCES E.
 TAYLOR, J.P., † Mrs. A. K. HIGGINBOTTOM, † Dr. R. P. RANKEN LYLE,
 J.P., † Dr. J. C. SPENCE
 * Member of the Health Committee † Co-opted member ‡ Appointed by City Council

STAFF OF THE PUBLIC HEALTH DEPARTMENT, 1940

MEDICAL OFFICER OF HEALTH—J. A. CHARLES, M.D., B.S., F.R.C.P., D.P.H.

Deputy Medical Officer of Health and Medical Superintendent of
 the City Hospitals for Infectious Diseases
 E. F. DAWSON-WALKER, M.D., B.S., B.HY., D.P.H.

Senior Child Welfare Medical Officer
 F. J. W. MILLER, M.B., B.S., M.R.C.P., D.C.H.

Maternity Officer—LINTON M. SNAITH, M.D., M.S., F.R.C.S., M.R.C.O.G.

Tuberculosis Medical Officer—G. HURRELL, M.D., B.S., B.HY., D.P.H.

Medical Superintendent—Barrasford Sanatorium
 C. G. R. GOODWIN, M.R.C.S., L.R.C.P.

Medical Superintendent—Newcastle General Hospital
 G. P. HARLAN, M.D., CH.B., B.HY., D.P.H.

Medical Superintendent—Shotley Bridge Emergency Hospital
 G. F. DUGGAN, M.B., B.CH., M.A.O., F.R.C.S. (Edin.)

Chief Sanitary Inspector—WILLIAM GRAY

Veterinary Officer and Inspector of Provisions
 HORACE THORNTON, M.R.C.V.S., B.V.SC., D.V.H.



**To Alderman WALTER THOMPSON, J.P., Sheriff of the
City and County of Newcastle upon Tyne, Chairman
of the Health Committee of the Corporation.**

Sir,

I have the honour to present the 68th Annual Report of the Medical Officer of Health on the sanitary state of the City.

The report covers the first full year of the second world war—a period of stress and trial, not without precedent in the history of this country, but certainly beyond the experience and anticipation of the majority of its inhabitants now living. The detailed tallies of the works attempted and achieved during the year by the ordinary services of the Health Department, and by the war-time organisations which by now have become so firmly grafted to the main stem, have been recorded in the reports of the officers responsible for the various sub-departments, hospitals and civil defence services, and are reserved for publication after the war. This letter does not attempt to summarise the activities of the year, but aims at presenting, *currente calamo*, a brief, and at times a critical, commentary on some of the more important features, developments and episodes.

The Vital Statistics.

It may be well to commence these remarks by a short reference to our statistical base line—the number of the population. As far as can be ascertained, Newcastle has not experienced any accession to its normal population, such as has been commonly recorded both in the manufacturing towns of the Midlands and in the residential rural areas. Its population has undoubtedly been reduced by recruitment to the armed Forces, and by the evacuation of children, women and cripples, but there has been no flight of industry, although the sea-borne traffic of goods has been curtailed to some extent. The estimated population on June 30th, 1940, was 255,900, and there is no reason to believe that the Registrar General's annual guess was less reliable than usual. In fact, the existence of that complicated necessity—the personal ration card—may have helped to simplify a somewhat mysterious procedure.

Amongst this population of 255,900 civilians there were in 1940, 3,361 marriages, 4,519 births, and 3,746 deaths.

Marriages and the Marriage Rate.

The number of marriages contracted is a record for the City. It exceeds by no fewer than 97 the total of the year 1915, which, likewise the first complete year of a world war, had previously held the premier place. Calculated in the usual fashion, the Marriage Rate for 1940 was 26.2 per 1,000 of the population.

There have been quoted in this report on several earlier occasions, some of the rotund and robust aphorisms of that greatest of English statisticians—William Farr—who turned many of his most glowing periods upon the topics of marriage, fertility and war. Here are further extracts from his treasury, which are of particular interest in these times.

Writing of the great decline in the number of marriages which occurred between 1799 and 1801, he says :—

“ Napoleon had won the battle of Marengo in 1800 ; our expeditions to Cadiz and the Ferrol failed ; the Emperor Paul of Russia revived the armed neutrality of the northern powers against England ; and laid an embargo on British shipping which interfered with the supply of corn from the Baltic. Mr. Pitt’s popularity was waning; there were the debt, the taxes, the failures of expeditions, the triumph of the inveterate foe over him, and—what was worse—the dearth.”

And then with reference to the sudden rise which followed :—

“ Events took another turn. The French were defeated at Alexandria (March 21st, 1801) ; the Emperor Paul was put to death ; the Danish fleet was taken by Nelson, and in October the preliminaries of peace between Great Britain and France were signed. The Peace of Amiens was definitively ratified on March 27th, 1802.”

“ The war with France broke out again in May, 1803 ; Buonaparte had dared to assert that “ Great Britain could not singly contend against France ” and threatened invasion from the shores of Boulogne. The sea was traversed by 500 British fighting vessels ; the land was covered with soldiers and hundreds of thousands of volunteers, militia and yeomanry. The people were full of enthusiasm, valour, and confidence in 1803 ; which we have seen did not stop the great increase of marriages that began in the year of the peace of Amiens.”

And then finally :—

“ In fine, the great fluctuations in the marriages of England are the results of peace after war, abundance after dearth, high wages after want of employment, speculation after languid enterprise, confidence after distrust, national triumphs after national disasters. The causes that increase and the causes that diminish marriage differ in energy ; they admit of various combinations ; they sometimes neutralize each other and the marriages express the result of all those forces on the public conduct of the people.”

Births and the Birth Rate.

It will probably be safer to compare the actual births occurring in 1940 with the totals of previous years rather than to contrast the birth rates for the respective periods. The present total population of the City, as stated by the Registrar General, is unduly

weighted in that it contains a larger proportion than usual of women of child-bearing age, due to the absence both of schoolchildren in the reception areas, and of young men on duty with the services. The number of births registered in 1940, namely 4,519, was smaller than the total of 4,646 reported in 1939. Nevertheless, the birth rates for the two years were respectively 17.6 and 15.8. During the five pre-war years, 1934-1938, the average number of births annually was 4,674. With this figure, the total for 1940 compares very favourably, and is a happy commentary on the steadfast confidence which pervades the English spirit. The protraction of the war will, no doubt, bring some reduction in the fertility of the population—but the balance will turn again in the better days to come.

The General Mortality.

The abnormal constitution of the population in 1940 also affected the Death Rate, which has apparently risen from 12.9 in 1939 to 14.6 in 1940, a proportionate increase of 13.2%. But actually the number of deaths in 1939—namely 3,661—was only increased to 3,733 in 1940. It would be wrong to construe this as indicating any serious deterioration in the health of the populace. One might readily suggest that the increase in the total mortality is no more than could be accounted for by the progressive ageing of the population and the larger number of persons in the higher age groups, but such an explanation would fall short of being complete. As far as can be ascertained the excess mortality occurred to a much greater extent amongst men and women between the ages of 45 and 65 (1,118 in 1940 as contrasted with 1,005 in 1939) than at any other period of life. Again, in 1939 deaths amongst males and females over the age of 65 numbered 1,790, whereas the comparable figure for 1940 was 1,684. Evacuation of the elderly may in part account for this difference, but it is probably not the only reason.

There are thus obvious difficulties and fallacies in attempting to derive at the present time any conclusions as to the trend of mortality amongst the population under war time conditions. Nevertheless the necessity for watching carefully for any significant adverse movement is more important than ever before.

Mortality from certain special causes.

The customary review of certain of the individual causes of deaths require some prefatory remarks. During 1940 the fiat of the Registrar General brought about changes in the procedure for sorting the multitudinous causes of death as reported by medical

practitioners. As a result greater weight is now attached to the cause of death which is placed first by the practitioner when he sets out on his death certificate the sequence of pathological processes which have culminated in the fatal issue.

In elderly persons, for example, "Bronchitis and Myocardial Degeneration" represents a very common description of the terminal conditions which result in death. Prior to 1940, "Myocardial Degeneration" as being indicative of that cardiac weakness in whose absence death would probably not have occurred, would have been given the preference. Under the new order of allocation, "Bronchitis" is the determined cause of death.

Another example of the way in which deaths are deviated from one group to another is to be seen under the headings "Intracranial Vascular Lesions" and "Arterio-sclerosis." The former conditions are included in the category of Diseases of the Nervous System; the latter constitutes a portion of the Other Diseases of the Circulatory System. Previously a large number of "strokes" due to arterio-sclerosis and other arterial diseases were grouped with the circulatory disorders; now they are herded together with Diseases of the Nervous System.

Other modifications have been made with a view to bringing together under the same heading certain diseases, separately named and identified, which are due nevertheless to one and the same cause. The notable example of this is Syphilis, which now includes Locomotor Ataxia, General Paralysis of the Insane and Aneurysm of the Heart and the Aorta. As a consequence of these alterations and for the further reason that detailed national statistics have not been made available for any year since 1938, it is no longer possible to publish the analytical and comparative table in which were recorded the average death rates from certain diseases in England and Wales and in Newcastle respectively. The period over which these rates were latterly averaged, exceeded a decade, and the information which could be extracted from the table was of considerable interest and value. The loss arising from its cessation will, therefore, be difficult to overcome. As a matter of historical interest the Final Table in this series is reprinted from the Annual Report for 1939. (Table 1).

Despite the demise of this most important table, some idea of the relative importance of the main causes of death can be obtained from Table II, which shows the order of precedence of the five chief captains of mortality. The new factors to which

TABLE I.

Average Death Rates per 100,000 in England and Wales and Newcastle upon Tyne during the Twelve Year Period 1927-1938. (Based upon the Registrar-General's Abridged List of Causes of Death.)

No.	Causes of Death.	England and Wales.	Newcastle upon Tyne.	Newcastle as a percentage of England and Wales.
(1)	(2)	(3)	(4)	(5)
	All causes	1,210	1,291	106.7
	*Infantile Mortality	62.4	82.5	132.2
1.	Typhoid and paratyphoid fevers....	0.7	0.7	100.0
2.	Measles	7.2	14.8	205.5
3.	Scarlet Fever	1.5	2.6	173.3
4.	Whooping Cough	6.6	9.1	137.9
5.	Diphtheria	7.7	5.7	74.0
6.	Influenza	32.7	25.5	78.0
7.	Encephalitis lethargica.....	2.2	3.1	140.9
8.	Cerebro-spinal fever.....	1.9	4.4	231.6
9.	Tuberculosis of respiratory system	67.8	98.1	144.7
10.	Other tuberculous diseases	18.2	22.5	123.6
11.	Syphilis	3.3	7.1	215.2
12.	General paralysis of the insane, tabes dorsalis	4.5	6.4	142.2
13.	Cancer, malignant disease	152.4	143.6	94.2
14.	Diabetes	15.4	15.3	100.0
15.	Cerebral haemorrhage, etc.	66.1	54.5	82.4
16.	Heart disease	259.0	248.1	95.8
17.	Aneurysm	3.4	4.2	123.6
18.	Other circulatory diseases	61.7	95.3	154.5
19.	Bronchitis	53.5	53.6	100.2
20.	Pneumonia (all forms)	77.2	92.3	119.6
21.	Other respiratory diseases	12.5	12.5	100.0
22.	Peptic ulcer	10.6	11.0	103.8
23.	Diarrhoea, etc. (under 2 years)	9.8	20.4	208.2
24.	Appendicitis	7.2	5.8	80.6
25.	Cirrhosis of liver	3.7	3.4	92.0
26.	Other diseases of liver, etc.	6.3	7.5	119.0
27.	Other digestive diseases	†	†	†
28.	Acute and chronic nephritis	38.0	44.5	117.1
29.	† Puerperal sepsis.....	1.5	1.8	120.0
30.	† Other puerperal causes	2.4	2.8	116.6
31.	*Congenital debility, premature birth, etc.	31.9	35.3	110.6
32.	Senility	45.2	26.7	59.1
33.	Suicide	13.0	11.8	90.8
34.	Other violence	42.0	39.7	94.5
35.	Other defined causes	†	†	†
36.	Causes ill-defined or unknown	†	†	†

* The rates for these headings are per 1,000 live-births.

† Not extracted.

‡ The rates for these headings are per 1,000 live-births for 1927 and per 1,000 live and still births 1928 and onwards.

Death rates which are equivalent to 125 per cent. or more of the similar rates for England and Wales are indicated in heavier type.

TABLE II.
SHEWING THE RELATIVE POSITIONS OF THE FIVE CHIEF CAUSES OF DEATH IN
NEWCASTLE DURING THE YEARS 1938, 1939 AND 1940.

	1938.	No.	Percentage of Total Mortality.	1939.	No.	Percentage of Total Mortality.	1940.	No.	Percentage of Total Mortality.
1.	Diseases of the Cardio-vascular System	1,216	33.5	Diseases of the Cardio-vascular System	1,278	34.9	Diseases of the Cardio-vascular System	859	22.9
2.	Cancer.....	444	12.3	Cancer.....	457	12.5	Cancer.....	474	12.6
3.	Bronchitis and Pneumonia	347	9.6	Diseases of the Nervous System	289	7.9	Diseases of the Nervous System	420	11.2
4.	Tuberculosis of the Respiratory System	249	6.9	Bronchitis and Pneumonia	275	7.5	Bronchitis and Pneumonia	364	9.7
5.	Diseases of the Nervous System	233	6.4	Tuberculosis of the Respiratory System	232	6.3	Tuberculosis of the Respiratory System	251	6.7

reference has been made in the preceding paragraphs have not affected their relative ranking, but substantial changes will be noted in certain of the totals and percentages.

The Cardio-vascular diseases still hold pride of place, but whereas in the two earlier years these conditions were responsible for more than one-third of the total mortality, less than one quarter could be laid to their blame in 1940.

It will be noted that Cancer maintains its recently acquired position as the second most important cause of death, and that its relative percentage is again slightly increased. For the third year in succession it has to be said that the total of deaths attributable to this disease is the highest yet recorded.

The new system of allocating causes of death has resulted in the attribution of 131 more deaths to the heading of Diseases of the Nervous System. In consequence, though their position in the grading remains unchanged these conditions have increased their share of the total mortality from 7.9% to 11.2%. One reason for regarding this increase as only apparent has been suggested in earlier paragraphs.

Bronchitis and Pneumonia which in 1939 had been relegated from the third to the fourth place, remained unaltered in ranking. The number of deaths assigned to these conditions has increased by 89, and their proportion of the total death roll is now 9.7%. In the Annual Reports for 1938 and 1939, attention was directed to the material reduction which had been effected in the deaths attributable to Bronchitis and Pneumonia, and this improvement was related, and correctly so, to the therapeutic achievements of the new group of remedies which are generally described by the Americans as the "Sulpha" preparations. One of the main fields for these remedies is in the treatment of Acute Lobar Pneumonia, and their efficacy is less marked in the Broncho-pneumonias of old age, in which a tired and elderly heart is more than half the disease.

Finally, Pulmonary Tuberculosis—a disease which even the ingenuity of the statistician has been unable to allocate elsewhere—makes a slight increase both actually and relatively. The total number of deaths attributable to this cause was 251 in 1940 as compared with 232 in 1939, while the respective proportionate of the total death roll were 6.7% and 6.3%. Turning to the number of deaths from other forms of Tuberculosis which are not dealt with in this "ranking" table, these registered a comparable increase by rising from 47 to 51.

During the five years, 1934-1938, the average number of deaths annually from Pulmonary Tuberculosis was 261, while the corresponding total for the other forms of the disease was 51. The mortality from Tuberculosis in all its forms during 1940, albeit registering slight increases over the previous year, was less than the average during the immediate pre-war period.

Unfortunately, however, the Tuberculosis mortality is but a record of events which were pending over a train of years, for Tuberculosis is a chronic disease. The causes, predisposing, environmental and infective, which are operating in any one period of time are not reflected—or only exceptionally so—in the deaths from Tuberculosis which are reported during that period. For a more direct and immediate insight into the trend of the activities of the disease, one must consult the live records of the Tuberculosis Dispensary. The tale they disclose will be discussed in a later section of this report.

Maternal Mortality.

As far as Maternal Mortality is concerned, 1940 was an “annus mirabilis” Only eleven maternal deaths were recorded, two of which were due to puerperal infection, and the remaining nine to the other accidents and diseases of pregnancy and the puerperal state. These figures are equivalent to a total maternal mortality rate of 2.37 deaths per 1,000 live and still births, which is less than the national rate of 2.61. The constituent local rates are respectively 0.43 deaths per 1,000 from puerperal infection and 1.94 deaths per 1,000 from other causes. The national rates similarly analysed were respectively 0.52 and 2.09 per 1,000. We cannot yet claim to control absolutely the various factors which are concerned in the causation of maternal mortality locally. The fluctuation in the number of deaths recorded amongst a comparatively stable total of births—21 in 1937; 16 in 1938; 22 in 1939 and now 11 in 1940—is too violent to be altogether satisfactory. Yet in a year when hinderances to success were commoner than aids to achievement, the results, even if a little surprising, are gratifying and encouraging.

Infantile Mortality.

Although it has not been possible to repeat the good tidings of 1939 and to announce the attainment of a new low record for Infantile Mortality, yet much immediate satisfaction can be derived

from the rate of 64 per 1,000 live births which was actually achieved. This is only slightly in excess of the 62 per 1,000 which was reported in 1939. During the same period the Infantile Mortality Rate for England and Wales rose from 50 in 1939 to 55 in 1940, so that relatively and actually the difference between our local rate and the national one is substantially diminished. As regards the Neo-natal Mortality Rate, which concerns the deaths of infants under the age of four weeks, the return for 1940 was better than that of 1939. In 1939, 154 children died during the first 28 days of life, which is equivalent to a Neo-natal mortality rate of 33 per 1,000 live births. For 1940, the total and rate were respectively 143 and 32. Turning to the actual causes of death during 1940, the distribution of these corresponded very closely with the findings of the previous year. Respiratory and bowel diseases and the major infections of infancy—tuberculosis, whooping cough and measles—were represented in much the same proportions as in 1939.

The Infectious Diseases—Incidence and Mortality.

The notifiable infectious diseases, excluding Tuberculosis, together with certain other infectious conditions to which notification has not been applied, were responsible for 303 deaths. The comparable total for the same group of diseases was 278 in 1939 and 391 in 1938. Reference has already been made to one group of notifiable infectious diseases whose yield of mortality has been steadily diminishing during the past three years—the pneumonias. One other contributing factor in the outstanding reduction in the consolidated mortality from infectious diseases has been the decline in deaths from Influenza and Diarrhoea.

Of the three infectious diseases which in times past headed the list of notifications, Scarlet Fever, Diphtheria and the Enteric Group of Fevers, only the last named increased its quota in 1940, and then only from 4 to 11 cases.

Scarlet Fever, which no longer ago than 1933 could count 2,034 victims, was represented in 1940 by 148 notifications—the smallest number ever recorded in the City. And for the third year in succession, no sufferer from Scarlet Fever died of the disease.

The story of Diphtheria is not quite so extraordinary for though the number of notifications fell from 243 to 155, and was much below the average of 500 per annum which pertained during the previous five years, the case mortality rate at 5.8% was a shade higher than has been experienced recently. Nevertheless, the nine deaths which this case mortality rate represents need not have occurred if the bulk of the

population of this City had been immunised against the disease. Compared with the achievements of an increasing number of American and Canadian cities in completely preventing Diphtheria, our record for Scarlet Fever, to which reference has been made already, seems but a puny accomplishment.

Many a city, larger than our own, on the American Continent, can point to a year or years, when Diphtheria was entirely absent as a disease, from amongst its inhabitants. Our good fortune with Scarlet Fever has been due, almost certainly, to one of these unpredictable variations in the striking power of the causal micro-organisms. But the records of these American Cities have been man made, and are the appropriate reward for a pertinacious, and ultimately triumphant, campaign for mass immunisation. Diphtheria prophylaxis by immunisation has been steadily pursued in Newcastle, but there is an apathy, hard to overcome, amongst parents of very young children. It is to be hoped that the war, which has changed so much, may ultimately cause this unthinking opposition to crumble also.

Measles exhibited one of its epidemic years for 4,649 cases were notified as compared with 466 in 1939. In the earlier year, only two deaths occurred, and the return for 1940 was, in proportion, not less satisfactory. Ten deaths were registered as due to measles, amongst the 4,649 cases notified. Compared with the experience of other epidemic years, this represents a very low rate of mortality.

Whooping cough, which shares with Measles the dubious primacy amongst the serious and widespread diseases of the early years of life, was in eclipse in 1940. Only 284 cases were notified, but these yielded seven deaths. Like Diphtheria, Whooping Cough is a disease preventable by immunisation and should be prevented. Its importance can be gauged from the fact that during the decade 1931-1940 just ended, Whooping Cough killed 200 children in Newcastle, while Diphtheria was credited with the deaths of 177. The ideal to be aimed at is that every child should be simultaneously immunised against both diseases towards the end of the first year of life. To wait until the first birthday has been passed may be dangerous as Whooping Cough frequently finds its victims at an earlier age. Finally reference must be made to one more infectious disease—Cerebro-spinal fever—the notorious boon companion of camps and campaigns, which has returned amongst us since the outbreak of war. Altogether 73 cases were reported from within the City boundaries, though the total number of patients suffering

from the disease who were admitted to the City Hospital for Infectious Diseases numbered 189. The balance was composed of Service cases and civilian patients admitted at the request of neighbouring local authorities. This incidence amongst Newcastle inhabitants has never been exceeded and has only been approached on two previous occasions—in 1932 and 1933. The number of admissions to the City Hospital is also a record.

From the foregoing data some idea can be obtained of the increased prevalence of Cerebro-spinal fever, and one can safely say that a few years ago such figures would have created concern and possibly evoked alarm. But in the interval remedies have been discovered which, though not yet absolutely specific, have brought about an amazing reduction in the fatality of the disease. Amongst the 73 Newcastle cases, there were nine deaths, which is equivalent to a case mortality rate of 12.3%. The treatment of Service patients was even more successful, for of 29 admitted to hospital, all recovered.

In the years 1932 and 1933, when 53 and 51 cases of Cerebro-spinal fever were reported in the City, the respective case mortality rates were 41% and 51%. These remedies which not only save life in abundance, but prevent many of the complications which mar an otherwise perfect recovery, are again members of the Sulphanilamide group of drugs. The achievements of these chemical discoveries are already so considerable, so widespread, that those of us who have seen the steady extension of their spheres of power, month by month, year by year, may be pardoned if we have failed to realise the full magnitude of their triumphs. The five years crowded with therapeutic victories, which have passed since their introduction will be regarded in the future as one of those legendary periods in the history of Medicine, when man extended his mastery over the evils of disease and pestilence.

The General Morbidity.

The mortality records of a city do not necessarily depict the state of health of its inhabitants. One cannot estimate the number of diabetics in a community, by calculations based upon the number of persons who year by year are reported to die of the disease. Similarly, the deaths from Locomotor Ataxia tell us little of the natural history of syphilis in times past, and nothing of its present activities. And then, there is that great volume of illness which incapacitates but does not kill, which strikes at the economic security of individuals and mars their happiness, but tears not a day from the calendar of their lives. Seventy years ago the im-

portance of disabling sickness, of morbidity as contrasted with mortality, was fully recognised and the Royal Commission of 1869 which considered the sanitary condition of the nation at that time, recommended the institution of systematic arrangements for the Registration of Sickness. This recommendation was never implemented and though today we have a number of sources to which we can look for partial information as to the sickness record of certain groups of the population, there is no method of obtaining a comprehensive statement of the health of the nation as a whole. Only when we know the full tale of ailments, illnesses and disabilities, transient, permanent and recurrent—but falling short of the fatal issue, shall we be able to envisage, even roughly, the state of the corporate health in peace or in war. Meanwhile, our best computations are but fortunate guess work based upon a shrewd consideration and weighing of the few statistical data which can be regarded as trustworthy signposts.

Although the tonic effects of war upon the health of the community were not so frequently proclaimed during 1940 as in the autumn of 1939, yet occasional voices were, and even now are heard, to announce that the health of such and such a section of the civilian population has never been better. It would be interesting and not unreasonable to challenge these optimists to produce the statistical data upon which their claims are based. On the other hand, we can readily accept that the health of the community has remained of an astonishingly high order. Nevertheless we would be wise to remember that the trials and stresses and deprivations of war show their effects rarely as sudden catastrophes. More often they are slow to manifest themselves, insidious in their working, cumulative in their result. This word of warning is more for the morrows of 1942 and 1943. The yesterday of 1940 was relatively free from portents of impending disaster.

Comparison of 1914-1916 and 1939-1940

Pulmonary Tuberculosis and Cerebro-Spinal Meningitis

It may be of interest to readers to note the comparisons which can be made between the second years of two great wars—the years 1915 and 1940—as shown by the statistical records of our City.

Here are the corresponding facts.

TABLE III.
COMPARISON OF 1914-1916 AND 1939-1940

	1914	1915	1916	1939	1940
Population....	271523	278107	278107	293400	255900
Birth Rate....	27.8	27.8	26.2	15.8	17.6
Births	7538	7545	7248	4646	4519
Marriages	2717	3264	2620	3125	3361
Death Rate	17.2	17.2	15.9	12.9	14.6
Deaths	4660	4771	4427	3661	3733
Infantile Mortality Rate....	137	133	123	62	64
Deaths under 12 months	1029	1007	899	289	284
Pulmonary Tuberculosis					
Mortality Rates	1.38	1.37	1.50	0.82	0.98
Deaths	375	380	417	232	251
Cases of Typhus Fever	2	1	....	....	....
„ „ Enteric Fever	102	100	76	4	11
„ „ Cerebro-spina					
Fever	1	27	43	5	73
„ „ Diphtheria	362	275	272	243	155
Deaths from—					
Influenza	22	22	36	36	42
Cancer	265	270	266	457	474
Syphilis (in 1st year of					
life)	13	9	14	1	1
Air Raid Deaths ....	....	1	....	....	9

The difference wrought by two decades of social changes and public health activities are clear to see—the diminished birth rate, the halved infantile mortality, the banishment of Typhus Fever, the virtual disappearance of the Enteric group of diseases, the suppression of congenital syphilis, the continuance of diphtheria. Let us turn our attention elsewhere. It will be seen that at any rate two diseases—Pulmonary Tuberculosis and Cerebro-spinal Meningitis—are showing signs of repeating their Great War trends.

It has previously been stated that the death returns of Tuberculosis fail to disclose the real activities of the disease amongst the population at risk. From the records of the Tuberculosis Dispensary, it is already clear that the number of proved new cases of Pulmonary Tuberculosis admitted to the City Tuberculosis Register was greater in 1940 than in 1939.

In the earlier year only 347 proved new cases of the pulmonary form of the disease were found amongst adults and children; in 1940, the comparative total was 398. This latter figure should be considered in relation to the experience of the quinquennium 1935-1939, during which an average of 378 new cases were discovered annually.

This increase though not startlingly large is sufficiently definite to demand the most constant watchfulness, so that the part played by the several contributory elements in causation—fatigue, malnutrition, overcrowding and the vaguer psychological factors—may be assessed, and a plan of campaign decided upon.

Cerebro-spinal meningitis, because of the therapeutic triumphs of the last few years, can be virtually disregarded as a cause of death but the circumstances which promote its prevalence—overstrain and, in particular, over-crowding cannot be dismissed so lightly. These are the self-same conditions as will lay us bare to the ravages of the great epidemic executioner—Influenza—before whom we fold our arms—all but defenceless.

The Child Welfare Services.

During the latter months of 1939, the work of the Child Welfare Centres was restricted as the result of the temporary evacuation of a number of young children and the diversion of health visitors to other duties. By the beginning of the year, these restrictive influences were largely removed—the majority of the evacuees had returned to Newcastle, and the health visitors were again busy about their proper tasks. Normal working was fully restored by the early summer.

In October 1940, the National Milk Scheme began to operate in the City, and thereafter the attendances at the centres showed signs of declining. At the time of writing (July, 1941) the reduction in attendances is of the order of 25% at all ages. The group with the greatest number of defections is the toddler group, from 18 months to 5 years. Amongst these children the falling off in attendances has been equivalent to 49%. In the less privileged areas of the City the decline is most accentuated, and at one particular centre in a slum area, the toddler attendances have fallen by 57%.

In our opinion these unsatisfactory results are attributable mainly, if not wholly, to the introduction of the National Milk Scheme. The object of this scheme is to make milk readily available—either free or at a reduced price—to any child under the age of 5 years, or to any nursing or expectant mother. Proposals of similar type were formulated by the Ministry of Health in 1938

but had failed to achieve acceptance by any large number of local authorities before war broke out. Newcastle, however, was one of the authorities which had agreed to work the earlier scheme, and had obtained from the Minister a special concession whereby the issue of milk to any of the beneficiaries would be contingent upon their attendance at Child Welfare or Ante-natal Centres, or the production of proof that they were receiving comparable medical care and supervision. It was felt that the purely nutritional benefits of the Milk Scheme could only be garnered to advantage in the presence of the medical, social and educational endeavours of the Maternity and Child Welfare Services.

The scheme of 1938 never fructified ; it was superseded by the National Milk Scheme, which has as its prime purpose the widespread distribution of milk amongst special groups of women and children, without any condition, save that they are members of the qualifying categories. The more precise details of the National Milk Scheme are as follows :—

1. It provides a pint of liquid milk daily, either free or at a cost of 2d., (according to the means of the household) to any expectant or nursing mother or child under the age of 5, provided always that milk is not issued both to the nursing mother and the nursling.
2. On the production of a medical certificate to the effect that dried milk is necessary for the welfare of the child, a suitable quantity of national dried milk will be provided, in lieu of liquid milk, for a child under the age of 12 months.

Apart altogether from its influence upon the Maternity and Child Welfare Services, the scheme has two major defects :—

- (a) There is no safeguard to assure the delivery to the recipient of either “ clean ” or “ safe ” liquid milk ; and
- (b) the unconditional issue of liquid milk to the children under the age of six months is a definite invitation to the mother to abandon breast feeding and thus deprive the infant of the finest foundation for its future health and welfare.

The scheme has other faults and failings, but these two are of paramount importance, because they may conceivably involve the exposure of the child to risks of disease and malnutrition.

The Child Welfare Services, over a period of 20 odd years, have gradually established themselves, both actually and potentially, as one of the most important of our health services. It is notoriously difficult to measure the respective contributions of

the various factors which, operating together, have brought about an advance in Preventive Medicine. With only a few dissentient voices, the Child Welfare Services have established a claim to be regarded as being amongst the most active participants in those battles which have resulted in the reduction of the infantile mortality and the diminished death rates between the ages of 1 and 5 years. Rightly or wrongly, but at any rate very humanly, we have been wont also to apply, year by year, simple yard sticks to determine the popularity of our Newcastle Service, and have regarded the number of infants and toddlers on the books of the Centres and the actual attendances made by these children, as indicative, to some extent, of the success of our efforts.

When these numbers decline precipitously—shortly after the introduction of a measure which renders attendance at a Child Welfare Centre unnecessary in the eyes of the mother who is influenced solely by concrete boons bestowed, we may be pardoned if we feel that the retrogression of the Service is directly related to the development of the National Milk Scheme. The officers of the Minister, when appealed to for guidance and assistance in the matter, have made it tolerably clear that if we wish to salvage some of the achievements of the past quarter of a century, we must sow our own ideas for harvesting and rely for remedies on our own resourcefulness.

Infantile Mortality in Newcastle upon Tyne during 1939

A Special Investigation

The historical record of Infantile Mortality in Newcastle makes melancholy reading. It is a tale of ignorance wedded to complacency—a chronicle, until recent times, of thoughtless indifference to the loss of young life, and of the blind acceptance of such mortality as inevitable. In 1899, the Infantile Mortality Rate reached its acme of 193 per 1,000 births. Twenty years later, in the first year of the post war millenium, it was still 120.

In 1939, after the passage of two more decades, it had fallen to the low record of 62 per 1,000 births.

Judged by the standard of 1899, the year 1939 was a golden epoch—an occasion for rejoicing and self-congratulatory stock taking. But as there are always new mountain heights to conquer, so also in this matter of Infantile Mortality there is a yet greater objective—the prevention of every avoidable infant death.

Far from making 1939 the excuse for any respite, it was decided to set on foot a detailed and laborious investigation into every death under the age of twelve months which occurred in the homes and hospitals of the City during the year. This research was undertaken, in collaboration, by Dr. J. C. Spence, F.R.C.P., and Dr. F. J. W. Miller, the Senior Child Welfare Officer, who would be the first to acknowledge the friendly assistance and co-operation of the paediatricians and general practitioners of the City. The report of their findings, which is printed as Appendix 'A' of this publication, should be read in its entirety. These few paragraphs will only draw attention to its most significant discoveries, and underline its recommendations.

The causes of death in the first year of life fall generally into two groups—those which operate on the first four weeks of life (constituting the neo-natal mortality) and those which are responsible for the mortality of the remainder of the first year.

Amongst the chief causes of death in the neo-natal period are prematurity, congenital deformities and birth injuries. During the remainder of the first year of life, infection in the widest sense—which includes the onslaught of organisms upon the skin, bowel and respiratory tract, as well as the recognised infectious diseases (tuberculosis and whooping cough)—is the predominating cause.

Let us generalise still further. Neo-natal mortality has not shown itself particularly amenable to progressive reduction, but ranging from 28 to 32 deaths per 1,000 births has remained practically stationary in many communities, though not in all. The remainder of the first year of life has been the period of notable achievement. In Newcastle, for example, between 1899 and 1939, mortality between the 2nd and 12th month of life declined from 150 per 1,000 births to 30.

The investigation of Dr. Spence and Dr. Miller produced many interesting revelations.

First to be established was the fact that in a very large percentage of cases, the cause of death as recorded by the certifying medical practitioner is a mere verbalism—a form of words—conveying no accurate information regarding the terminal processes to the Registrar General. There is a fashion in these descriptive phrases, and “congenital debility” and “prematurity” cover a miscellany of fatal conditions.

Second; amongst practitioners there is an ignorance, which they themselves admit, of the disease and infections of the first year of life, and the practical problems in treatment which are involved.

Thirdly ; birth injuries lead to birth deaths, and many of these could be prevented by ante-natal supervision of higher standard, and by more competent obstetric care. The philosophy of the acceptance of the inevitable, in so far as birth deaths are concerned, should be anathema to the obstetrician.

Fourthly ; prematurity is a reproach to our present standards of ante-natal care, for much of it could be prevented. And where the birth of a premature child can not be avoided, our arrangements should ensure that it will be reared successfully under the conditions and in the surroundings which modern medicine and science have provided for this purpose.

Fifthly ; breast feeding, a recognised prophylactic against infection, should be encouraged by every possible means.

Sixthly ; proximity of healthy infants and sick persons, whether children or adults, should be prohibited. Whooping Cough and Tuberculosis, both important causes of infantile death, are pre-eminent amongst the diseases, which crowds and contacts and carelessness, inflict upon the very young. Of Whooping Cough, it can be further said that its prevention, as with diphtheria, is a matter for Public Health Organisations to accomplish by means of immunisation.

Seventhly ; as in all these questions, greater knowledge will only come from research and enquiry, and knowledge newly acquired must be scattered like seed to multiply. A thorough acquaintanceship with the physiology of the infant and with the diseases which attack it, should be part of the training of every medical student, nurse and midwife, and upon this foundation, clinical experience and post-graduate instruction should build still further. Far too few post-mortem investigations of infant deaths are made, and our knowledge of the pathology of infantile mortality languishes and lags in consequence.

Finally ; an end must be made to the spirit of fatalism and quiet resignation which accept infantile disease and death as unavoidable. Three pertinent questions should be asked in every case. How did death occur ? Why did it occur ? Was it inevitable ?

If we approach the problem of infantile mortality on these lines, we will realise that it is not one problem, but an interlocking complex in which ignorance, superstition, indifference and a failure to apply properly and promptly such knowledge as we do possess—all play a part. If we are determined to put an end to these things, then it should not be difficult to attain a rate for infantile mortality which

might seem at present to be the ideal of Utopia. The aim which Dr. Spence and Dr. Miller put forward for Newcastle—namely, a rate of 40 infant deaths per 1,000 live births—is neither visionary nor unobtainable.

Venereal Disease

During the earlier period of the first Great War, statistical information of a reliable kind as to the prevalence and incidence of Venereal Disease amongst the civilian population was almost entirely lacking. Nevertheless, by the end of 1915, there were sufficient straws of popular and medical opinion and a mass of data from military sources, to make it clear that Venereal Disease, if not already more obviously manifest in the general population, was likely to become so at an early date. On the 12th July, 1916, the Venereal Diseases Regulations laid down the bases of our present organization for the ascertainment and treatment of Venereal Disease. The success which that scheme had achieved prior to the Second Great War could be measured by several yardsticks—a reduction in the number of new infections attending the clinics; the recession of locomotor ataxia and certain kindred disorders; the virtual disappearance of congenital syphilis in the new-born as a cause of mortality.

The outbreak of war in September 1939, affected temporarily, the smooth running of the clinic machinery, but by dint of wise anticipation and skilful administration, Dr. A. E. W. McLachlan and his colleagues overcame the various difficulties which characterised the transition from the serenity of peace to the emotional tension of war.

At first it seemed that the new conditions of living were not to be reflected in the work and records of the Clinic, and that the unhappy experiences of the previous war were—by some inexplicable grace of fortune, intelligence or planning—to be escaped entirely. Gradually, however, but not too blatantly, definite evidence began to present itself and showed by the end of 1940 that Syphilis at any rate, and Gonorrhœa not improbably, were extending their incidence and their ravages. The most peremptory element in this evidence was the fact that early infective syphilis in women had increased by at least 50%.

The steps which were taken to combat this increase did not commence to operate until 1941. By reason of the existing state of the law our counter-activities were, and could be, only educational.

The Municipal Hospitals

During 1940, the City Health Committee, through its appropriate sub-committees, was responsible for the administration of a larger number of hospital beds than at any other time. These beds were distributed amongst the following institutions :—

	BEDS	PATIENTS ADMITTED DURING 1940	
City Hospitals for Infectious Diseases	510	2306	
Barrasford Sanatorium	95	220	
Newcastle General Hospital	900	9763 (3249)	} <i>Emergency Medical Services</i>
Shotley Bridge Emergency Hospital	800	2918 (2918)	
Whitton Tower Convalescent Home	25		
Shoreston Hall Children's Home	22		
The Whalton Children's Home	30		
(Gilsland Emergency Maternity Home, which ceased to function in February, 1940, has not been included in the list).			

No fewer than 15,207 patients were treated in these various institutions, and of that total 6,167 were cases for which the Emergency Medical Scheme of the Ministry of Health accepted financial responsibility. The personnel employed in and about the hospitals comprised :—

Consultants	36
Resident Medical Staff	30
Nurses and Auxiliaries	750
Clerks	40
Porters and Domestics	460

The work of each and every of these institutions has been carried out under conditions of great difficulty, and the many problems which have beset Medical Superintendents and Matrons—problems which arose from black-out, fire-watching, rationing, restricted leave, and an ever changing staff—have been faced and resolved in a manner which deserves the very highest and sincerest praise. It is impossible to deal with the work of every institution in detail, and therefore a few words regarding the two largest, the Newcastle General Hospital and the Shotley Bridge Emergency Hospital, must suffice.

Newcastle General Hospital

We have been accustomed year by year to announce the continued progress and development of the Newcastle General Hospital, and to record annually since 1936, the opening of some new addition to the hospital, or the reconstruction of one of its older departments. Even in 1940, this sequence has been preserved.

As regards structural and architectural achievements (which obviously do not include the brick excrescences and subterranean excavations which add to the safety, but not to the comeliness of the hospital) it was found possible to complete the modernisation of 'C' Flat in the main hospital block. This scheme was carried out by the City Architect, Mr. R. G. Roberts, F.R.I.B.A., with all the careful attention to detail and consideration for spaciousness and lighting which have characterised his previous work at the hospital. The Health Committee has been fortunate in that the services of one of the finest artists in hospital design of the period have been at their disposal in recent years. Photographs of these alterations are not available for publication at present, but any visitor who has inspected these new wards will have noted how admirably suited they are for use "post bellum" as a pay bed section of the hospital.

The statistical details which disclose the amount of work carried on by the hospital are set out in Table IV.

TABLE IV.

Year	Admissions	Operations	Maternity Cases
1930	3,048	596	97
1931	3,598	1,125	99
1932	4,522	1,428	161
1933	4,776	1,560	194
1934	5,544	2,076	225
1935	6,245	2,722	273
1936	6,707	2,722	388
1937	7,801	2,719	545
1938	8,354	3,388	694
1939	8,469	3,476	811
1940	9,763	2,937	858

It may be stated in passing, that the reduced surgical activities of the hospital are a direct consequence of the transfer elsewhere of the two important clinics for Neurological Surgery and Thoracic Surgery. These clinics were re-established under the Emergency Medical Scheme at the Gateshead Emergency Hospital, Stannington, with the respective titles of Neurosurgery Centre (Northern Region) and the Thoracic Surgery Centre (Northern Region). Nevertheless, their filial association with the Newcastle General Hospital was maintained, for the out-patients of both clinics continued to attend at the hospital. Apart from this slight variation in the work of the surgical departments, every other section of the hospital pursued its normal functions with full efficiency. In certain cases of which the

Maternity Unit and the Department of Prostatic Surgery are the most notable, the volume of work increased. In the Maternity Unit more mothers were delivered than in any previous year. This statement alone is insufficient to describe the increasingly important part which the Unit is taking in the obstetrical services of the City. Owing to the reduced facilities at the Princess Mary Maternity Hospital (which is still housed in its temporary home in the Northern Counties Orphanage) many more patients suffering from obstetrical complications and abnormalities were referred to the Newcastle General Hospital.

Of the Department of Prostatic Surgery it can be truly said that it has more than justified the confidence of the Health Committee. During 1940 no fewer than 245 patients were admitted—some for investigation; the majority for the surgical operation of “Punch prostatectomy” which is performed in the department. The surgeon-in-charge—Mr. W. E. M. Wardill, F.R.C.S., has already published one important paper on his results.

On the medical side of the hospital, a valuable addition to its resources was made by the installation of an Orthodiascopic Cardiac X-Ray set. This apparatus completed the equipment of the Cardio-Vascular Department, which under the supervision of Professor W. E. Hume, is used extensively by the military authorities in determining the fitness of service recruits and invalids. The facilities of the Department are also available to any medical practitioner in the City.

A considerable proportion of the work of the hospital during the year consisted in the investigation and treatment of Service sick. In June 1940, a few casualties, British, French and Belgian, evacuated from Dunkirk, were also admitted, but, in the main the Service patients have suffered from the ordinary maladies and accidents of every day life. Many of the conditions for which patients are admitted to hospital are relatively trivial, but be that as it may, the patients are nevertheless incapacitated temporarily. One of the unfortunate concomitants of the curious alliance between the Armed Forces and the Emergency Medical Service system of the Ministry of Health is a rigorous insistence upon the preparation of a plethora of paper forms and the submission of a large number of serial returns. To give one example only—the admission, transfer or discharge of a patient involves in each case the preparation of four copies of a document to mark the occasion. With the present form of organization, the need for this repetition cannot be disputed, but it would be interesting to ascertain precisely how much time,

labour, paper and pence are expended upon this administrative quadruplication.

Amongst other patients dealt with under the Emergency Medical Scheme, were a small number of air-raïd casualties. During 1940, the City and surrounding area enjoyed a remarkable and somewhat inexplicable freedom from large scale aerial attacks. Only seven air-raïd casualties were admitted, and apart from practices, the special organization for the reception and resuscitation of such patients was never called into use. All the same, the arrangements for these purposes were constantly under review—the most important innovation being the institution of a Blood Bank. This, with the complementary Bank at the Royal Victoria Infirmary is a constituent part of the local Blood Transfusion Service, fostered in the first instance by the Tyneside Blood Transfusion Service, under the enthusiastic direction of Mr. C. H. Holland, and later integrated with the Regional organization of the Ministry of Health.

Finally, to mention one more record achieved—the largest number of nursing staff ever employed in the hospital. The Matron (Miss D. R. Gibson) had under her immediate supervision a body of nursing personnel which numbered no fewer than 400 members. For her tactful and capable solution of all the multitudinous difficulties which the employment of such a staff inevitably throws up, and for the maintenance of a standard of nursing which has never fallen short of the best, Miss Gibson is entitled to the thanks and congratulations of the Health Committee and of those more remote and less tangible entities—the Ministry of Health and the Service departments. Similarly, and in equal measure, Dr. G. P. Harlan, has not only fully deserved official commendation, but has doubtless achieved the inward satisfaction which comes to every Medical Superintendent of a busy, well managed and efficient hospital.

Shotley Bridge Emergency Hospital

If the responsibilities of the Medical Superintendent and Matron of the Shotley Bridge Emergency Hospital were slightly less onerous than those of their opposite numbers at the Newcastle General Hospital, the problems for which they had to improvise solutions, and the local difficulties which they were called upon to overcome were proportionately more numerous. It is unnecessary to say that both Dr. G. F. Duggan and Miss J. L. Watt proved their capacity on every occasion.

With the completion of the hatted portion of the hospital, 850 beds became available. To staff these beds, nurses of all grades were allocated to the hospital. For the accommodation of this large nursing staff, which overflowed the existing nurses home, three hostels were also equipped. During the year, 2,918 patients were admitted, including three military convoys of sick and wounded from France and Belgium, a civilian convoy from the Eastern Counties, and another composed largely of the aged inmates of certain of the bombed institutions of the London County Council. Shotley Bridge received all these invaders, whatever their language or dialect, and provided them with treatment, and a friendly welcome. One would here acknowledge the kindness shown by inhabitants of Consett and Shotley Bridge to the patients and staff of the great hospital which has appeared mushroomwise in their midst.

The remainder of the patients dealt with by the hospital comprised Service sick admitted direct, or transferred from primary receiving hospitals such as the Newcastle General Hospital, and civilian patients admitted for treatment to the special centres which had been established. These clinics were originally two in number—one for Psychoneuroses ; the other for Maxillo-facial injuries. The former dealt with large numbers of patients from the Services and a few from the Merchant Navy. Air-raids in the Northern Region failed to produce amongst the civilian population any patients for admission to this department. The Maxillo-facial Centre concerned itself largely with plastic surgery and the civilian patients came almost exclusively from the waiting lists of local hospitals.

It is worthy of note as one of the definite accomplishments of the Emergency Medical Service, that amongst the first patients admitted to this clinic was a man with a hare lip, who claimed to have been on a hospital waiting list for 39 years.

After his deformity had been cured, the gratified subject of this operation of cosmetic perfection was pleased to admit that the result more than rewarded his patience.

Hospital Co-ordination

The Nuffield Provincial Hospital Trust

The thirteenth section of the Local Government Act of 1929, reproduced almost verbatim as Section 182 of the Public Health Act of 1936, is one of the charter clauses of hospital co-ordination. It lays upon the Local Authority the duty of conferring with bodies

representing the Committees of Management and the medical and surgical staffs of voluntary hospitals within its area, whenever municipal projects for hospital extensions are in process of formulation. No doubt, the purpose of the noble author of this clause was to put a brake upon the activities of Local Authorities, but the more liberal minded members of both parties concerned—the Local Authorities and the Voluntary Hospitals have for long declined to stand formally upon the letter of the Act and have preferred to invoke its spirit to their reciprocal benefit.

Consultations between the City Health Committee and the Voluntary Hospitals of Newcastle were common in the years between 1930 and 1936. In January of 1937, steps were taken to give to the previously occasional and informal conversations, some species of regularity and order, by the establishment of the Newcastle Hospitals Joint Advisory Board. This body, hampered in its activities and limited in its flights by the fact that its writ did not run beyond the City boundaries, nevertheless exercised a considerable influence on local hospital policy in the years before the war. Much of its success and influence in this sphere were due to the energy and wise guidance of the Chairman—Lord Eustace Percy.

During the Autumn of 1939, the glowing generosity of Lord Nuffield brought into existence the body which is now known as the Nuffield Provincial Hospitals Trust. The income of the Trust derived from its endowment of £1,500,000 is directed to foster the purposes of the Trust, which includes the “co-ordination on a regional basis of hospital and ancillary medical services throughout the Provinces, Scotland, Wales and Northern Ireland.”

In April, 1940, a preliminary meeting was held in Newcastle, at which certain of the trustees and the Secretary of the trust, explained its objects to representatives of Voluntary Hospitals. Later during the anxious days of May, the inaugural Advisory Council was held under the Chairmanship of Lord Eustace Percy at King's College. That meeting held “*on the day when heaven was falling; the hour when earths foundations fled*” was a signal example of the deliberate detachment, heroism and steady confidence of the British spirit.

Later in the year other meetings were held, and before its close the North East Council was well established, and its constituent executive and advisory organs, the Chairman's Committee and the Medical Advisory Committee, had been called into being.

It is early yet to speak of the work of the Council, except to say that it has escaped almost completely the pre-natal difficulties and

complications of parturition which have been unfortunately manifest, though without mortality, in other areas.

If it should achieve nothing else, and there is no reason to believe that the Council will fail in even greater accomplishments, it will have helped to bring together in the region, those men and women, who, setting aside the urges of personal and parochial ambitions, have offered "*ad majorem gloriam Dei*" their gifts of service to the sick and lame amongst us.

The Civil Defence, Medical and First Aid Services

The details of the comprehensive Casualty organization in which are included First Aid Parties, First Aid Posts, Gas Cleansing arrangements and Ambulance Services were given in the report for 1939. Only minor modifications in these arrangements and establishments were made in 1940. Fortunately, only a few calls were made upon the organization during the year and it was never exercised to the full. Nevertheless, the enthusiasm and zeal of all branches of the Civil Defence Medical and First Aid Services continued unaltered. For this happy condition of affairs we are indebted to those who have rendered such unselfish and generous assistance in times past—Dr. Gavin Muir (First Aid Commandant) and Mr. T. Brooke Davison (Ambulance Officer) and the host of willing helpers whose names are literally too numerous to catalogue. The duties of Staff Officer to the Services have been shouldered by Mr. Robert Dobbin, to whose industry, tact and powers of co-ordination a grateful tribute is owing.

Conclusion

The preparation of an Annual Report in accordance with the new and war-time model for such documents places upon the signatory the special responsibility of giving a balanced account of the years achievements, omitting much in the process, but forgetting nothing of prime importance. It is by no means easy to strike the appropriate mean and on this occasion I am amply aware that the colours may not have been evenly laid. If, therefore, there are obvious deficiencies in the record, I hope that they may be understood and forgiven.

Of one thing, however, I remain continually conscious—namely, of the spirit of helpfulness and even of personal sacrifice which have animated the staff of the department throughout the grim and yet heroic days which filled so many of the months of 1940. My thanks are again due to the whole staff of the Department and

in particular to Dr. E. F. Dawson-Walker and to Dr. F. J. W. Miller. One to whom I have personally acknowledged my indebtedness, many years over, but never adequately enough, is no longer with us to receive those thanks, for Mr. Alf. Hedley died in harness in April 1941. For his devoted service to the department both the Health Committee and myself can only offer our humble gratitude.

In conclusion, Sir, may I extend once again to yourself and to all the members of the Health Committee, my sincerest thanks for the sympathetic co-operation and unfailing encouragement which have marked all our relationships, and have been in themselves both sustenance and reward.

I am, Sir,

Your obedient servant,

J. A. CHARLES,

Medical Officer of Health

Health Department,

Town Hall,

Newcastle upon Tyne.

November, 1941

SUMMARY OF STATISTICS, 1940.

Population (estimated mid. 1940)	255,900	X
Area of City, inclusive of river area (acres)	11,401	
Estimated number of houses	81,874	X
Rateable value	£2,735,608	
Sum produced by 1d. rate	£10,610	
Births	4,519	
Birth rate (per 1,000 population) calculated on population of 255,900....	17.6	
Marriages	3,361	
Deaths	3,746	
Death rate (per 1,000 population) calculated on population of 255,900	14.6	
Death rate (per 1,000 population) adjusted by comparability factor	16.2	
Infantile Mortality (deaths under one year per 1,000 live births) calculated on 4,454 live births	64	
Natural increase in population (excess of births over deaths in the year)	773	

CHIEF CAUSES OF DEATH.

Cause.	Number.	Percentage of total deaths.
Diseases of the Heart	859	22.9
Cancer	474	12.6
Diseases of the nervous system	420	11.2
Bronchitis and pneumonia	364	9.7
Tuberculosis (all forms)	302	8.1
Diseases of the veins and arteries	255	6.8
Tuberculosis (Pulmonary)	251	6.7
Diseases of the genito-urinary system	167	4.5
Diseases of early infancy, and congenital malformations under 1 year	140	3.7

INFECTIOUS DISEASES.

Disease.	Cases notified.	Number of deaths.	Death rate per 1,000 population
Scarlet fever	148	—	—
Diphtheria	155	9	0.035
Enteric fever	11	1	0.004
Erysipelas	128	2	0.008
Cerebro-spinal fever	73	9	0.035
Measles	3,794	10	0.040
Whooping cough	284	7	0.027
Tuberculosis (all forms)	588	302	1.180

(new cases)

Influenza, which is not notifiable, caused 42 deaths.

INFANTILE MORTALITY IN NEWCASTLE UPON TYNE DURING 1939

By J. C. SPENCE, M.D., F.R.C.P., and
F. J. W. MILLER, M.B., M.R.C.P., D.C.H.

*(From the Babies' Hospital and the Child Welfare Department,
Newcastle upon Tyne)*

The investigation upon which this report is based was undertaken throughout the year 1939 in order to study the causes of death amongst infants. We were primarily concerned with an explanation of the high infantile death rate in Newcastle (Figs. I and II) but knowing that a mere study of the certified cause of death would be both inaccurate and inadequate, we planned a more critical and personal form of investigation. In doing this we hoped that the results would suggest immediate steps which might be taken to reduce the number of infant deaths and also indicate methods and direction of further studies in this subject.

Method of Study.

The essential feature of the method of study was a personal and detailed inquiry, by an investigator with a modern clinical experience of disease in infancy, into the circumstances of the death of every child below the age of one year. Before the investigation began, a meeting of the city practitioners was called at which the objects of the investigation and procedure to be adopted were explained. The co-operation of the practitioners was readily enlisted and throughout the inquiry we found them ready and anxious to impart full information, not only concerning the fatal illness and cause of death, but also on the difficulties and problems which so often hinder a satisfactory clinical diagnosis. As it was obviously desirable to collect the history and circumstances of the illness as soon as possible after the death of the child it was necessary to receive early notice that the death had taken place. Arrangements were therefore made with the Registrar of Births and Deaths whereby the name and address of each child and of the practitioner signing the death certificate were sent to us within 24 hours of the registration of the death.

As soon as this information was received contact was made with the practitioner by telephone and if he was not already acquainted with them, the objects of the study were explained and he was asked to co-operate. As the investigation became more widely known the telephone call became merely the arrangement of a convenient time for discussion of the case. On meeting the doctor, either at his own home or at hospital, the history of the final illness and the events leading up to it were discussed and recorded. Frequently the facts obtained at this time were amplified later by information from ante-natal records, infant welfare charts or hospital notes and in 54 of the 272 cases, the results of post-mortem examinations were available.

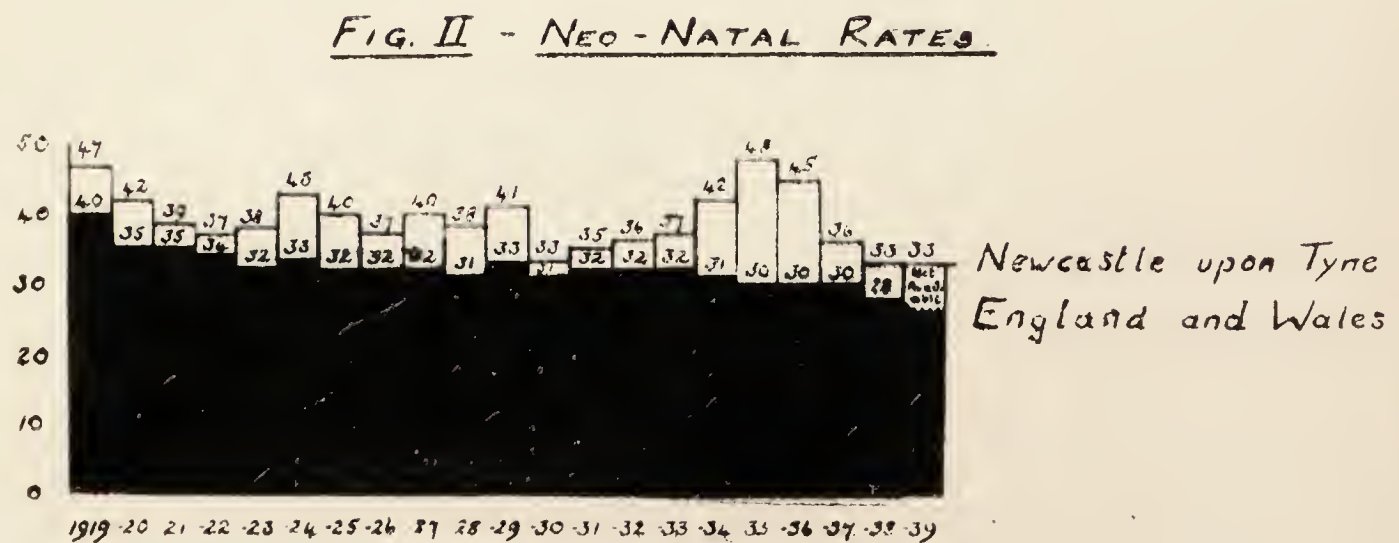
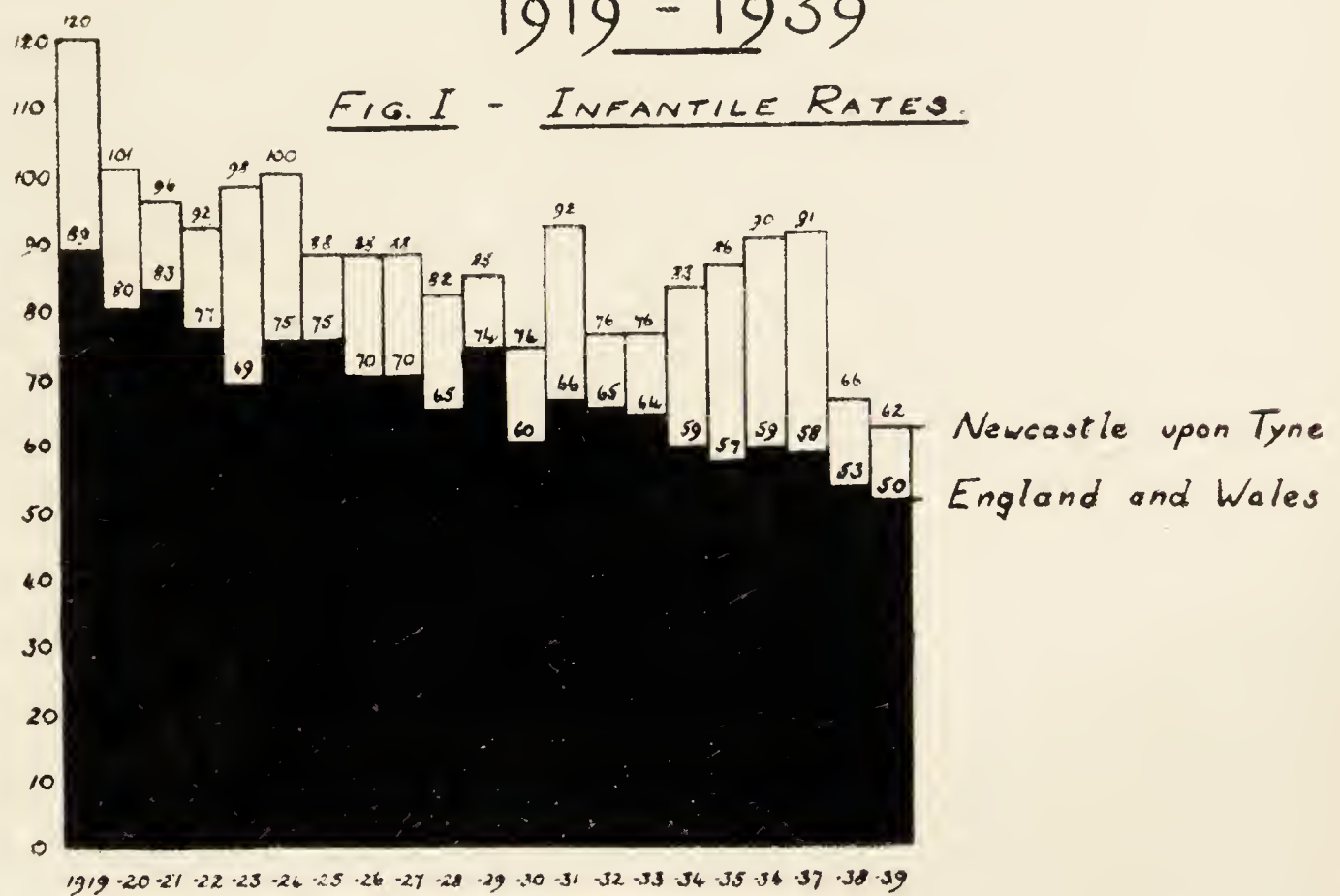
Finally after an interval of about 14 days the child's home was visited and details of family and personal history, economic conditions and social status obtained. (The record sheets used to collect these details are reproduced as Appendix A.)

In this way the details of the deaths of 272 children were collected, reviewed and classified. Only in two cases did the death of a child within the age group pass unrecorded by us so that the series of cases is practically a complete record for the year.

Early in the investigation it was apparent that doctors both in hospital and in private practice often find great difficulty in completing the death certificate with accuracy. For this reason we disregarded any information given on the death certificate. The difficulty arises from various sources; from the frequency with which fatal illnesses occur in infancy without the localising signs characteristic of illnesses in the adult; from the general failure to understand the diseases peculiar to infancy; from the slowness of many parents in calling medical attention to infants so that the doctor may be called only to see a moribund child. Many doctors frankly admitted that in such circumstances they use terms such as marasmus, inanition, prematurity, atelectasis, congenital heart disease or gastro-enteritis; for the purpose of certifying death. Examples may be seen by reference to Cases No. 14, 15, 25, 104, 107, 148, 179, 241, 251, and 272. (Appendix D.)

The inaccuracy of certification was such that we have estimated that in one third of the cases the recorded cause of death gave an inaccurate or inadequate description of the actual cause. A detailed consideration of the problems of death certification in infancy would be out of place here but we hope to discuss them in another communication.

COMPARISON OF INFANTILE AND NEO-NATAL MORTALITY RATES OF NEWCASTLE UPON TYNE AND ENGLAND AND WALES 1919-1939



Distribution of 272 infant deaths by Sex, Age, and Month.

Of the 272 deaths 154 were male and 118 female. When the deaths are distributed according to the age of the child it can be seen (Figure III) that 108 (39.7%) deaths occurred in the first week, 138 (50.7%) in the first four weeks and 134 (49.3%) from the end of the fourth week to the end of the first year.

The monthly distribution of deaths, divided into those occurring before and after the 28th day, throughout the year is shown in Figures IV and V. That a greater number of deaths did not occur during the months of October, November and December may be explained, partly at least, by the reduction in the numbers of infants and expectant mothers resident within the city owing to the operation of the Government Evacuation Scheme.

Discussion of the Causes of Death in 272 Infants.

The classification of the causes of death which we made after detailed and personal investigation is presented in Table I.

TABLE I.

Classification of the Ascertainable Causes of Death in 272 Infants.

<i>Cause of Death.</i>					<i>No. of Cases</i>
(1)	Congenital Malformation	....	....	....	29
(2)	Birth-death	....	....	....	38
(3)	Deaths apparently due to prematurity alone	....	....	....	47
(4)	Infective Causes	....	....	....	102
	(a) Respiratory infection				
	(including Otorrhoea)	....	....	....	33
	(b) Alimentary infection	....	....	....	12
	(c) Infection of unknown origin	....	....	....	32
	(d) Acute pyogenic infection				
	Staphylococcal infection	....	....	....	2
	Streptococcal infection	....	....	....	3
	Skin infection (no bacterio- logical investigation)	....	....	....	2
	(e) Pertussis	....	....	....	9
	(f) Tuberculosis	....	....	....	6
	(g) Diphtheria	....	....	....	1
	(h) Congenital Syphilis	....	....	....	1
	(i) Influenza	....	....	....	1
(5)	Other conditions—				
	Blood disorders	....	....	....	4
	(a) Haemorrhagic disease of newborn	....	....	....	3
	(b) Icterus gravis neonatorum	....	....	....	1
	Intussusception	....	....	....	1
	Intestinal obstruction	....	....	....	1
	Pink Disease	....	....	....	2
	Accident	....	....	....	7
	(a) Scalds	....	....	....	1
	(b) Asphyxia	....	....	....	6
(6)	Cases in which no opinion could be given	....	....	....	41
					<hr/> 272 <hr/>

It is seen from Table I that the deaths could be classified under six heads, the clinical aspects of which we shall now briefly classify.

Congenital Malformations.

In this group were 29 cases, details of which are given in Table II. The criterion of classification used was the presence of a congenital abnormality of such a degree that death occurred in the first few hours or days of extra-uterine life or normal development was prevented to such an extent that the child's resistance to infective conditions was diminished. Thus of the five children grouped as congenital heart disease one died on the first day and one, also prematurely born, on the 11th day; the other three lived longer than 3 months but never thrived normally and showed clinical signs of a cardiac lesion. Mongolism has also been included within this group because it is an inborn defect which hinders normal development and it is well known that children born with this defect are particularly susceptible to infective conditions; two of the four Mongols recorded here died from broncho-pneumonia.

TABLE II.

Types of Abnormalities found in 29 cases where death was primarily due to congenital malformation.

						No. of Deaths
Spina Bifida, hydrocephalus, monsters, etc.	....	....	....	....	....	11
Alimentary malformations	....	....	....	....	....	7
Atresia of oesophagus	2					
Pyloric stenosis	2					
Intestinal obstruction	2					
Imperforate anus	1					
Congenital heart disease	....	....	....	....	....	5
Mongolism	....	....	....	....	....	4
Mental defect	....	....	....	....	....	1
Osteogenesis imperfecta	....	....	....	....	....	1
						<hr/> 29 <hr/>

Birth-Death.

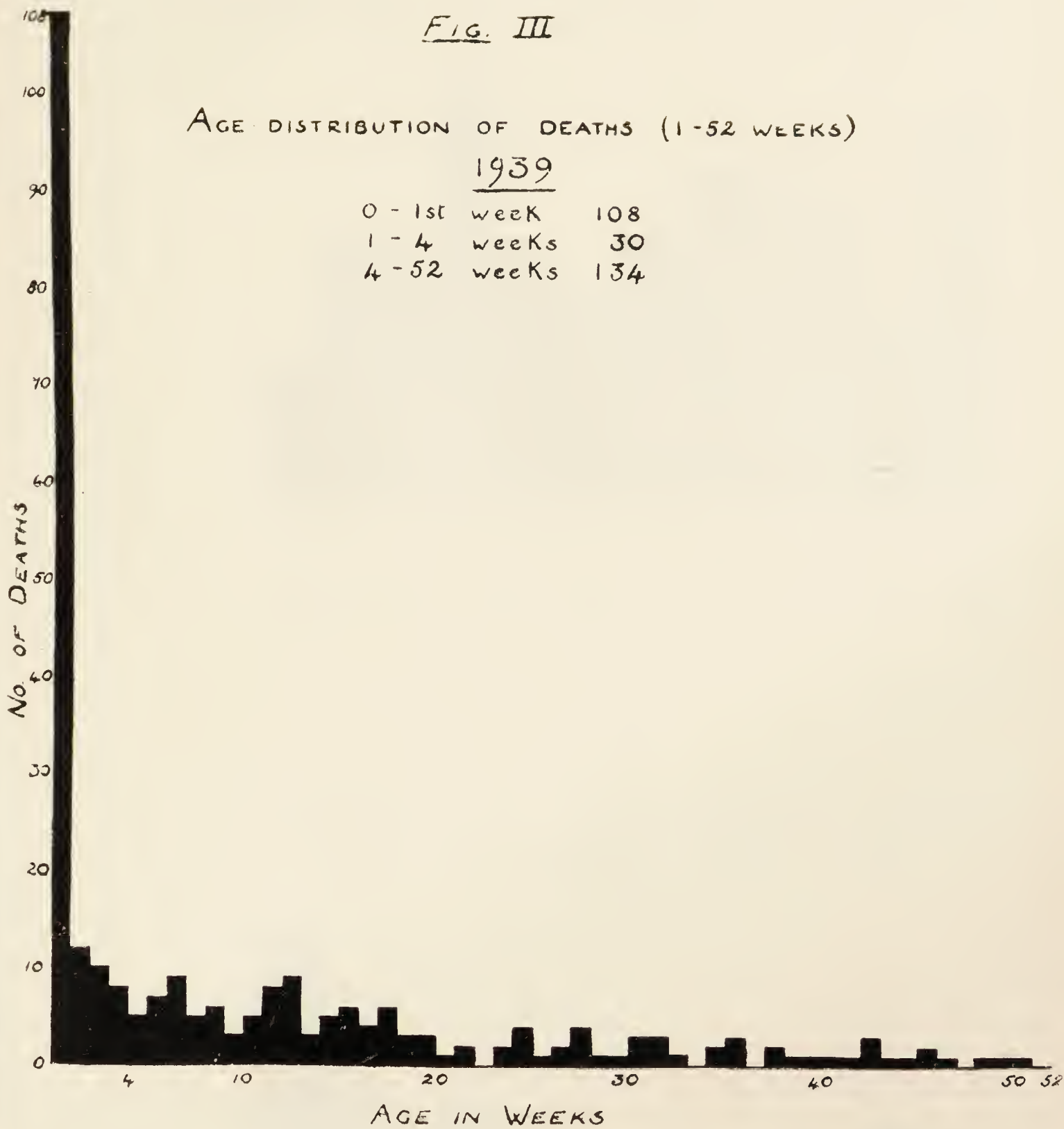
This group includes all infants, who were so subjected to adverse conditions during birth that they failed to survive. In such a group are therefore gathered together all children who died as a direct result of birth and at least 38 (14% of the total deaths) could be thus classified. Most of these children died with the clinical signs of intracranial haemorrhage, such as failure to cry or suck, convulsions or cyanosis in the first few days of life, or asphyxia pallida, but some may have been examples of the type

Fig. III

AGE DISTRIBUTION OF DEATHS (1-52 WEEKS)

1939

0 - 1st week	108
1 - 4 weeks	30
4 - 52 weeks	134



MONTHLY DISTRIBUTION OF INFANT DEATHS 1939

FIG. IV

(a) Neo-natal Deaths: Total 138

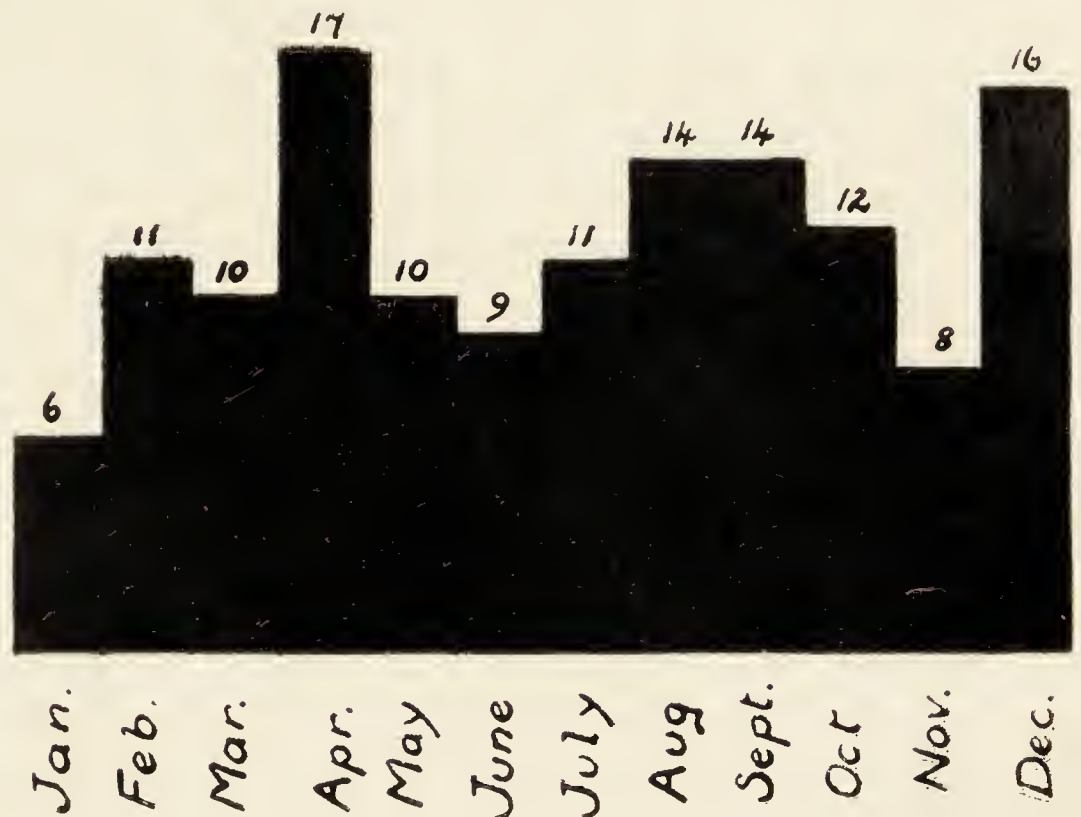
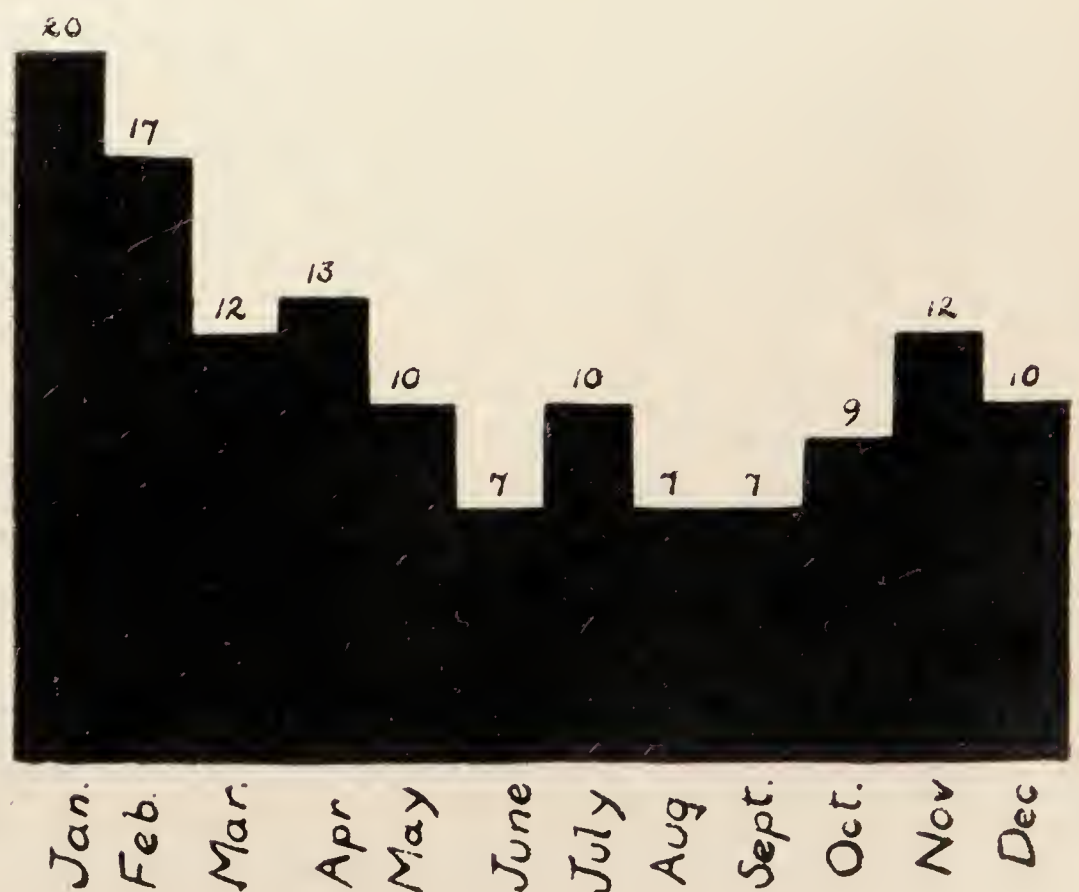


FIG. V

(b) Deaths of children aged more than 28 days: Total 134



of neo-natal pneumonia associated with the aspiration of amniotic fluid and described by Johnson & Meyer (1925)¹ Faber & Sweet (1931)² and McGregor (1939)³. Many of these were certified by the practitioner as atelectasis or asphyxia but from a study of the clinical history it was evident that if atelectasis existed it was secondary to some intracranial or other injury.

It is however extremely difficult to indicate with any certainty the number of these deaths which might have been avoided. To do so would require detailed information, which could not always be obtained, on questions such as the following :—

- 1—Did the mother seek and obtain adequate ante-natal care?
- 2—Was the standard of obstetrical care satisfactory?
- 3—Were all possible measures taken to care for the newly-born child?

Notwithstanding the difficulties certain facts can be stated. It was evident that the large majority of the mothers had sought ante-natal care from the medical practitioner, the ante-natal centre or the midwife. Only in six cases had such care been entirely neglected or sought only a few days before the expected date of confinement. There is also some evidence from the information available that a higher standard of ante-natal care of the mother might have prevented some of the infant deaths (see Cases 28, 118, 151, 220, 250 and 257). To what extent better obstetrical care might obtain is beyond the scope of this discussion. We found also that clinical information concerning the child from the time of birth till the time of its death was very difficult to ascertain and the impression which remained with the investigators was that in hospital the children disappeared into the nursery and at home into the care of the midwife and failed to receive a degree of clinical care and medical supervision similar to that accorded the mother suggesting that the obstetrical care of the mother was more fully provided for than the paediatric care of the child.

Prematurity.

Prematurity has long been known to be an important factor in a large number of infant deaths each year. The children may die from the effects of prematurity alone, *i.e.*, they have not sufficient vitality or are so immature that they cannot maintain an independent extra-uterine existence; or they may die from the combined effects of prematurity and another cause or causes. The older and heavier the infant the less likely is it that death will be due to prematurity alone.

In the cases investigated there was a group of 47 in which prematurity seemed to be the only cause of failure to survive but there is little doubt that if it had been possible to obtain adequate pathological and bacteriological investigations in each case one could have demonstrated that many of these deaths were complicated by factors such as birth injury or neo-natal pneumonia. It should be noted that the great majority of the deaths, 43 out of 47, occurred during the first week (Table V).

When however, the definition of prematurity* as recommended by the Royal College of Physicians is applied to the deaths for the whole year it is found to include no less than 78 or 28.6% of all the infants in our series. That more than a quarter of all the infant deaths occurred in premature infants is a fact which must be considered in any discussion of the effect of premature birth upon the infantile mortality. Anderson & Lyon (1934)⁴ in a review of the literature have shown that premature birth is more liable to occur in certain abnormal conditions than in normal pregnancies; in multiple pregnancy especially in primigravida; in maternal toxæmia or in maternal illness or infection. But there are many cases outside these recognised associated conditions where the premature birth occurs for no discoverable reason. In the same review the authors stressed that suitable precautions during the ante-natal period will reduce the incidence of prematurity and therefore the risk in any given case. Thus an important aspect of ante-natal care should be the recognition of conditions likely to lead to premature birth and the provision of the appropriate treatment at the earliest possible time.

The 78 children were born of 73 mothers; in 39 there was present a factor which could be recognised as a possible cause of the prematurity but in the remaining 34 no cause was found.

TABLE III.

Probable Causes of Prematurity.

<i>Maternal Condition.</i>	<i>No. of Cases.</i>
Multiple pregnancy	15
(all twin pregnancies; in 5 cases both children died)	
Maternal toxæmia	13
(including 2 cases of twins)	
Rheumatic heart disease (congestive heart failure)	2
Repeated history of prematurity or miscarriage	4
Caesarean section	2
Acute infections of the mother—	
Pyelitis	1
Pyelonephritis	1
History of anti-syphilitic treatment	1
	39

*“That in conformity with the standard in international use an infant whose birth weight is $5\frac{1}{2}$ lbs. (approx. 2,500 grammes) or less shall be considered for the purpose of comparison of records as either immaturely or prematurely born according as the estimated time of gestation is full time or less.”

TABLE V—Cause of death shown in relation to the age of the child. (For key to case histories see Appendix C).

Cause of Death.	0-1 day	-7 days	-14 days	-21 days	-28 days	Neo-natal period	4-12 weeks	-24 weeks	-36 weeks	-52 weeks	Total for year
Congenital malformations	8	5	2	....	....	15	6	5	1	2	29
Birth Death	22	14	....	....	2	38	....	....	....	....	38
Prematurity (alone)	29	14	1	1	2	47	....	....	....	....	47
Respiratory Infection ....	....	....	....	1	....	1	9	9	9	5	33
Alimentary Infection ....	....	....	1	....	....	1	3	6	2	....	12
Infections of Unknown origin ....	....	1	3	2	....	6	9	12	2	3	32
Miscellaneous Infections ....	....	Strept. Inf. 1	Acute skin Inf. 1	....	Acute staph. skin Inf. 1	3	Acute Staph. 1 Acute Strept.1	Skin Inf. 1	Diph. 1 Acute strep. Inf. 1	Influenza 1	9
Pertussis ....	....	....	....	1	....	1	2	4	1	1	9
Tuberculosis ....	....	....	....	....	....	....	1	....	....	5	6
Congenital Syphilis ....	....	....	....	....	....	....	1	....	....	....	1
Miscellaneous Conditions ....	....	Blood disease of newborn 3	Icterus gravis neonatorum 1	....	....	4	Intestinal obstruction 1	Pink disease 1	Pink dis. 1 Intussusception 1	....	8
Accident	Asphyxia 2	....	....	....	Asphyxia 1	3	Asphyxia 1	Scalds 1. Asphyxia 2	....	....	7
Cases in which no opinion could be given	2	7	3	5	2	19	13	5	3	1	41
Total in age group	63	45	12	10	8	138	48	46	22	18	272

Information in respect of ante-natal care showed that it had been sought at a proper time in the pregnancy by 58 of the women ; of the remaining 15, four had attended the clinic or hospital only a few days before the confinement and eleven had not sought any ante-natal care. From the records of 37 patients who visited ante-natal clinics between the 6th and 7th months of pregnancy it was apparent that 16 had not, before the child was born, received an obstetrical examination. In two other women there was a history of repeated miscarriage or premature birth but no special precautions appeared to have been taken during the last pregnancy. Of 15 cases of twin pregnancy in which the children were prematurely born in only two had the expectant mother failed to seek ante-natal care but as far as we were able to ascertain there was no information to suggest that the multiple pregnancy had been suspected in any of the remainder. This apparent failure to diagnose twin pregnancy must be important and must have an effect upon the incidence of prematurity and upon the deaths of premature infants.

The causes of death in the 78 children in so far as they could be ascertained were :—

TABLE IV.

<i>Cause of Death.</i>	<i>No. of Cases.</i>
Prematurity alone	47
Birth-death	4
Congenital malformations	3
Asphyxia (accidental)	1
Infections of unknown origin	10
Respiratory infections	1
Pertussis	1
Insufficient evidence but probably factors other than prematurity	11
	<hr/> 78 <hr/>

As with children in the previous group it was extremely difficult to obtain precise details concerning the clinical care of premature children and there was no evidence of specially organised paediatric care of premature infants in hospitals while at home the details of treatment again seemed to be left to the midwife. Both in hospital and at home these deaths still seem to be accepted with a feeling of inevitability.

Deaths from Infective Causes.

No less than 102 of the 231 deaths upon which an opinion could be given appeared to be due to infective conditions. As far as

possible they have been divided into clinical types but it was frequently impossible to say more than that the child died with the syndrome of an infective illness of unknown origin. The classification is necessarily tentative and much clinical, pathological and bacteriological work still remains to be done before it will be possible to delineate accurately all types of infective illnesses found in the new-born and older infant.

The commonest clinical syndrome was that of an infection with respiratory signs and 33 deaths were classified with this group (including 4 cases where otorrhoea was the main clinical sign). As might have been expected the seasonal incidence was marked only one case occurring between the months of May and September inclusive with the greatest number of cases in the late winter and early spring months when the incidence of respiratory infection in the adult population is heaviest. A history of direct contact with a person suffering from an acute respiratory infection or sore throat was obtained in nine cases.

An attempt was also made to discover the type of child which is killed by this infection. In 28 cases information concerning the child's previous health was available; in 14 cases the child had thrived well and had not had any illness since birth; in 4 there had been one temporary interruption of health while in the remaining 10 the respiratory infection appeared as a terminal illness in children who had never thrived. All types of children therefore seem to be liable to this infection.

The illness was commonly a rapid one lasting in 15 out of 27 cases where the length of illness was known, less than one week, *e.g.*, Cases 7, 24, and 122. The clinical syndrome was that of a spreading involvement of the respiratory tract beginning with a "cold in the head"; passing in about 48 hours into bronchitis and finally in about the same length of time terminating with the signs and symptoms of broncho-pneumonia.

Alimentary Infections.

The term "gastro-entéritis" in relation to disease of infants, has come to be used loosely and now is frequently applied to any condition accompanied by diarrhoea and vomiting. From clinical experience in such conditions it is known that these symptoms are frequently signs of an infection outside the alimentary tract, such as otitis media, pyelitis or meningitis. It is extremely difficult to know therefore how far the deaths certified as "gastro-enteritis" give a true picture of the incidence of alimentary infections in the

infant population. This was felt to be important and to represent as accurately as possible the number of deaths due to alimentary infections inclusion in this group has been restricted to cases which have been proved bacteriologically ; cases which appeared as sudden overwhelming alimentary illnesses when no signs of parenteral infection were present and cases sometimes of less acute onset but with blood and mucus in the stools. Such restrictions were necessary when it was not possible to obtain bacteriological examination but if by imposing them a few cases of alimentary infection have been missed, it is thought that the percentage of deaths (5.2%) given in our classification represents a fair approximation of the proportion of deaths actually due to such infections. Of the twelve deaths which made up this group only three were proved bacteriologically, two cases of dysentery, one type Flexner and one type Sonne ; the other a food poisoning with *B. Aertryke* (Cases 31, 185 and 206). The remaining nine cases were all unproven but the the history made a diagnosis of true alimentary infection very probable, *e.g.*, Cases 62 and 81. It was not possible to describe one common clinical syndrome or type of child affected except to note that all, except one, were artificially fed and more than four weeks old. The exception (Case 253) was a breast fed baby of 9 days who died after 2 days severe diarrhoea which came on immediately after two older children in the same family had suffered from diarrhoea.

Infections of Unknown Origin.

In addition to the cases in which the presence of an infection was proved bacteriologically and those in which the clinical history and symptomatology made a diagnosis of the site of the infection reasonably sure there were 32 cases in which death was most probably infective in origin but further classification was impossible. Examples are seen in Cases 9, 17 and 234. The disease process in most cases was rapid; in 21 being less than 7 days and in only one of the nine remaining cases more than 14 days. No common clinical syndrome can be described but this is to be expected for the group probably contains several types of infections.

There were however two characteristics which were frequently present, failure to thrive normally and artificial feeding. Only three of the children were thriving and well before the onset of the final illness; the rest had "never thrived," "had always been ailing" or had "never got on." Obviously they had not that good start during the first few weeks of life which is so important clinically and to which attention has been drawn by Waller.⁵

Analysis of the feeding showed that of the 32 children, 6 of whom were within the neo-natal period, only two aged 10 days and 6 weeks were breast fed till the time of death or the onset of the final illness and that of the other 30 only two had been breast fed for as long as two months.

Miscellaneous Infections.

This small but interesting group of deaths contains one case of diphtheria (Case 21), one case of meningitis due to *haemophilus influenzae* (Case 1) and seven cases of infection with pyogenic organisms. The child who died from diphtheria might have been infected from its grandmother living in the same house whose throat contained diphtheria bacilli. No contact history could be proved in the case of meningitis.

The remaining seven cases illustrate some of the clinical syndromes which may result from infection in early infancy. In five cases the infection was contracted during the neo-natal period. In three of the babies, death occurred within one week, while in the remaining four the illness lasted for periods of 19 days, 4 weeks, 7 weeks, and 15 weeks. The clinical types were varied, in two cases (86 and 89) there were rapidly spreading bullous skin lesions from which, in one case (86) *staphylococcus aureus* was isolated. Another case (208) from which a *staphylococcus aureus* was also isolated was very different, beginning on the fifth day and presenting successive scattered deep-seated lesions till death occurred on the 24th day. The prognosis in cases of *staphylococcus aureus* infection and the type of lesions produced vary greatly and it is possible that they are conditioned by the strain of organism causing the infection and by the immunological reactions of the particular child, for Cass (1940)⁶ has described cases of infection in the long bones of infants in which the prognosis was considered good and it is apparent that much more clinical and bacteriological work will be necessary before the results of infection with this organism can be fully understood.

The three cases of streptococcal infection were each of a different type; one caused death on the 5th day after birth (Case 129) and the mother died two days later; another (Case 229) began on the 6th day and lasted till the 56th during which time many scattered lesions appeared in the long bones. The third in a child of seven months (Case 26) began with an attack of diarrhoea and vomiting followed by cervical adenitis, erysipelas and meningitis.

The last case of the group (Case 241) shows how an infection beginning in the neo-natal period may cause scattered superficial lesions, retard progress and finally cause death after many weeks.

Pertussis

In a year when the incidence of pertussis in the childhood population of the city was not greater than usual there were nine deaths of infants under the age of one year. The diagnoses were not proven by use of the cough plate but all except one had a history of contact with early infective whooping cough in other children within the family circle and all had a typical paroxysmal cough.

Pertussis must therefore be regarded as a serious condition in a child under the age of one year and it may be noted that during the year of this investigation more deaths occurred in this particular age group from pertussis than resulted from tuberculosis and that in epidemic years it is reasonable to suppose that the number of deaths would be increased.

Tuberculosis

Only six (2.2%) of the deaths were due to tuberculosis and in five the clinical diagnosis was confirmed by autopsy. The striking fact which appeared was that in all but one of the six cases the father or mother of the dead infant suffered from open pulmonary tuberculosis; in the sixth case no adult source of infection was found but it appeared probable that one existed for another child aged 14 years, a cousin living in the same street, had died some months previously from tuberculous meningitis. This history of intimate contact with an infective adult was so clear that in the last case (255) after the death of the infant, the mother who had not complained of illness was examined. A radiogram showed a tuberculous cavity in the left upper lobe and her sputum was found to contain tubercle bacilli.

Congenital tuberculosis is so rare that there can be little doubt that these six infants were all healthy born and received the infection after birth. In one case (45) the child was separated from the mother and sent to an aunt. Unfortunately the aunt lived in the same street so when she became ill with influenza the child returned home where it was exposed to infection for two weeks. Four months later it died from miliary tuberculosis.

Syphilis

Only one case of clinical congenital syphilis occurred throughout the year (Case 90) and there were no reasons to suspect other cases except one in which a mother who had a history of having received treatment some years previously gave birth to a premature child which died after a few hours. •

Miscellaneous Conditions

A small group of four cases of neo-natal disorders of the blood; two cases of Pink Disease; one of intussusception and one of acute intestinal obstruction were grouped together. The blood disorders were three examples of haemorrhagic disease of the newborn and one case of icterus gravis neonatorum (erythroblastosis foetalis). The children suffering from the former condition were born, one at home, one in a nursing home and one in hospital; in all the condition was promptly recognised and treated appropriately by intramuscular injections of whole blood. The case of icterus gravis although jaundiced on the second day was not admitted to hospital until the eighth day when it was moribund and there was no hope of successful treatment. Early recognition and treatment might have prevented this death and it is impossible to say that a transfusion might not have saved some of the other three lives.

The two cases of Pink Disease (Cases 146 and 147) had both been diagnosed, treated in hospital and died shortly after discharge. The child with acute intestinal obstruction died a few days after operation and the baby with the acute intussusception (Case 94) died four weeks after operation with an illness which suggested a ward infection complicating the original condition.

Accident

There is no doubt that the great improvement in mothercraft which has occurred in recent years has reduced the annual number of deaths from accidents. But at least seven occurred during 1939, one from toxæmia following scalds received from a hot water bottle placed in its cot by its mother; six from asphyxia. Of these six deaths three infants were accidentally suffocated in their cots and three were overlain while in bed with their parents. In one (Case 260) there was at least a suspicion that the overlaying might not have been accidental.

Deaths from Unknown Causes

When all the information concerning each death had been collected, a large group of 41 cases remained in which this information

was not sufficient to indicate the cause of death. Of this group 19 deaths were of children less than 28 days old and 22 of children more than 28 days old. Although classification could not be made it can be stated that this group almost certainly contained cases of death from birth injury and from infective causes so that the actual incidence of these causes of deaths is likely to be higher than the apparent.

Coroner's Cases

When a child dies without having received medical attention, in cases of accident or if there is any possibility that death might have been due to causes other than natural processes, the death must be reported to H.M. Coroner. In this respect, therefore, it is interesting to note that 29 (11% of the total deaths) were so reported during 1939. These deaths included cases of accident but most commonly the child was found dead in bed and it was apparent that not infrequently the parents had failed to call medical attention, either because they did not consider it was necessary or because they did not recognise that the infant was ill. Two post mortem examinations were held but, after review of the 29 cases, 12, remained to be grouped with the deaths from unknown causes.

Deaths during and after the Neo-natal period

It is known to all interested in problems of infantile mortality that the fall in that mortality which has occurred in recent years has been achieved more by the reduction of deaths of children over the age of one month than in those under the age of one month. This fact alone suggests that different causal factors are operative in these age groups. In Table V the causes of death at different periods during the first year are shown; in Table VI the deaths during and after the neo-natal period have been summarised and it can be seen that those of the neo-natal period are associated largely with birth-death and prematurity and those after the first month with infective conditions.

TABLE VI.

1—*Deaths in the Neo-natal Period (first 28 days).*

	No. of Deaths.
(a) Congenital Malformation	15
(b) Birth-death	38
(c) Prematurity	47
(d) Blood diseases of newborn	4
(e) Miscellaneous causes including infections of newborn	15
(f) Unknown causes	19
	<hr/> 138 <hr/>

2—Deaths after Neo-natal Period (4-52 weeks).

(a)	Congenital malformation	....	....	....	....	14
(b)	Infective causes	....	....	....	....	90
	1—Respiratory infections	....	....	....	....	32
	2—Alimentary infections	....	....	....	....	11
	3—Infections of unknown origin	....	....	....	....	26
	4—Miscellaneous acute infections	....	....	....	....	6
	5—Pertussis	....	....	....	....	8
	6—Tuberculosis	....	....	....	....	6
	7—Congenital syphilis	....	....	....	....	1
(c)	Miscellaneous causes	....	....	....	....	8
(d)	Unknown causes	....	....	....	....	22
						<hr/> 134

Infantile Mortality, housing and social status of the family.

For many years it has been known that infant mortality is greatest in the poorest sections of the community and that it decreases as social conditions improve. Thus it is fair to say that even to-day a child born into a professional family has a substantially greater chance of living to the end of the first year than a child born into the family of an unskilled labourer.

Accordingly in an investigation such as this, we thought it desirable to consider whether such a generalisation which is true of the country as a whole is true also of Newcastle.

We attempted therefore to correlate the various causes of infant death with the housing conditions of the families in which they occurred and also to calculate the neo-natal and infantile mortality rates for the various social classes within the city (the status of the family being determined by the father's occupation). The number of cases in our groups were, however, too small to obtain significant results and they will not therefore be published in this report. But in the absence of figures relating to this city we feel that it would be profitable to draw attention again to the conclusions reached by Dr. Peter McKinlay (1929)⁷, in an investigation into infantile mortality in four areas throughout the country (Croydon, Sunderland, parts of Staffordshire and Oxfordshire).

He showed that :—

1—Neo-natal causes of death show much less tendency to be associated with over-crowding than death after the first month. In both groups the average rooms per person was less than the standard.

2—The infantile mortality from syphilis, bronchitis and pneumonia (a respiratory type of infection formed the largest single group of deaths due to infection in our series) was largest amongst families on the lowest economic level and declined steadily with ascent towards the more "well to do".

Although it is the opinion of the authors that many of the infant deaths which occurred are preventable even under existing social conditions and that the neo-natal death rate is less dependent upon social conditions than the death rate after the first month, yet it is also true that the loss of infant life will not reach a minimum until the conditions of life, for a large section of our population, are improved.

Relationship of Type of Feeding to Infant Death.

It is a much repeated maxim that breast feeding is the best method of infant feeding and in an important article in 1934, Grulee, Sanford and Herron (1934)⁸ reported the results of an investigation into the morbidity and mortality rates in 20,000 infants and showed conclusively that these rates were lowest in those infants entirely breast fed. Their paper ended with the words "if one hopes to decrease further the infant mortality of this country (U.S.A.) it must be done by encouraging breast feeding". In the present investigation the effect of failure to breast feed is particularly seen in the group of deaths due to infections of various types and in those infants falling within the definition of prematurity.

TABLE VII.

<i>Cause of Death.</i>	<i>No. of cases.</i>		<i>No. breast fed till 6 months or to time of death.</i>	
Respiratory infection	33	....	....	4
Alimentary infection	12	....	....	1 (aged 9 days)
Infection of unknown origin	31	....	....	2 (aged 10 days & 6 weeks)
Pertussis	9	....	....	5
Other infections	8	....	....	5
	93			17

It will also be remembered that 78 infants died whose birth weight was less than 5½ lbs. (see page 6). Of these 46 died before the 4th day and before breast feeding could be established but of the remaining 32 only 5 aged 11, 18, 25, 40 days, and 18 weeks were breast fed up to the time of the final illness or to the time of death. That the proportion of artificially fed infants in these groups was significantly greater than in the infant population as a whole is difficult to prove but that it was likely to have been so can be indicated by certain figures collected by Dr. E. G. Brewis in Newcastle during 1938 in which he found that of 1,326 infants attending welfare centres 58.4% were wholly breast fed for 3 months and 34.7% wholly breast fed for 6 months. Recently Robinson

(1939)⁹ has shown that approximately 30% of children attending an infant welfare centre in Liverpool are entirely breast fed for 6 months.

In our opinion it is not possible to doubt that an increase in the incidence of breast feeding would assist materially in a reduction of the number of infant deaths and especially in the deaths from infective causes. The fact that weaning in the first 6 months of life brings with it an increased risk of infection is one which should receive the widest publicity.

Note on the Value of Post Mortem Records as obtained during the course of the Investigation.

Of the 272 deaths 127 occurred in hospital and in 54 of these a form of post mortem examination was obtained. Most of these 54 cases, 35 in number, were in children over the age of one month and only 19 were within the neo-natal period. Yet the numbers of children dying in hospital in each age group was almost equal, 63 within and 64 after the neo-natal period.

The findings available were largely those of morbid anatomy, the examinations were not usually carried out by trained pathologists but in 31 cases of the 54, facts of assistance in determining the cause of death were obtained. The remaining 22 cases (excluding one case in which the notes were not available) provided no pathological findings of assistance in determining the cause of death.

During the year therefore almost one half of the post mortem examinations performed on infants in Newcastle failed to be of assistance in determining the cause of death. This will be no new fact to pathologists who know the frequency with which a negative examination occurs yet it surely means that more study should be given to the problems involved and that if this study is given by trained pathologists our understanding of the processes of diseases as they occur in the newly born child and the young infant will be increased.

Discussion of the Prevention of Infant Deaths.

There can be no doubt that many of the deaths of infants which occur each year in Newcastle are preventable and the important point with which we are here concerned is whether, from our survey of the causes of death, we can suggest measures which might have an immediate effect in reducing the number of deaths.

Congenital Malformations. In the group of congenital malformations this is not possible to any degree and in our series only

two deaths might have been prevented; both were cases of pyloric stenosis which had been diagnosed, surgically treated and death had been caused by complication of the operation.

Birth-Death. We have shown that the majority of the mothers whose infants died as a result of birth injuries sought ante-natal care but there was some evidence that this care did not always appear adequate. We found great difficulty, also, in obtaining precise information regarding the clinical care given to infants before death. As a result of the inquiry, however, it is our opinion that there would be a reduction in the number of deaths in this group if the standards of ante-natal care were improved; if the practice of obstetrics was directed more towards the birth of a healthy child free from birth injury or infection during the course of delivery; if there was a greater knowledge of the technique of nursing and feeding of infants with more care and greater study of the newborn child and older infant by those with paediatric training.

Prematurity. The difficulties of rearing premature infants are many, difficulties of feeding, temperature regulation, prevention of infection; all these difficulties are recognised by paediatricians. Yet in Newcastle there are at the present time no wards set aside for the adequate care of premature infants. This can only be because the part which a properly equipped and staffed department for premature infants can play in the reduction of infant deaths is not realised and that the deaths of premature children are still accepted as inevitable. Yet in those places where the problem has received attention, the results have been worth while. To quote one example, in Birmingham in a ward with accommodation for 12 infants, 1,400 babies were cared for during the years 1931-1938; 63% lived, 37% died; 55% of those infants weighed less than 4 lbs. at birth and 95% less than 5 lbs. Crosse (1939)¹⁰. Given similar facilities and paediatric supervision, there is no reason why the number of deaths of premature children in Newcastle should not be materially reduced.

Deaths from Infective Causes

After the neo-natal period the chief causes of infant deaths are infective conditions of various types. When, however, the peculiar manifestations of infections in the first year of life are recognised it can be realised that complete differentiation of these various types is extremely difficult. We have described three main types, respiratory, alimentary and a type we have called infections of unknown origin but there is no doubt that much further work of research is urgently required.

At present all we can say is that there would be a decrease in the number of deaths from infective causes if there were an increase in the number of children breast-fed till the sixth month, and if there were an ever increasing awareness of the measures necessary to avoid infection especially the dangers of exposing infants to adults suffering from catarrhal or respiratory infections. An infection which in an adult produces a "cold" may in an infant produce a fatal broncho-pneumonia.

Deaths from Pertussis and Tuberculosis. Infection in both of these conditions is most usually obtained from a member of the family circle; in one case a school child and in the other an adult. It must be recognised and more prominence should be given to the fact that whooping cough in the first year of life is a killing disease and that every effort must be made to shield the child from infection. If the danger is recognised, the appropriate steps can in many cases be taken privately on the advice of the family doctor but where this is not possible, the local authority should be prepared, and in Newcastle is prepared, to remove the source of infection from the infant by isolating the affected child in hospital.

Any measures which will reduce the incidence of whooping cough or prevent the occurrence of epidemics in the childhood population are likely to have an influence on the disease in infants. In this respect it is appropriate to mention the significance of the recent report by Bell (1941)¹¹ giving the results of a field trial of alum precipitated vaccine in which, over a period of four years, the incidence of whooping cough in a protected group of children was one third of that in an unprotected group.

In the case of infantile tuberculosis, the problem is similar, but its practical solution more difficult for the only safe measure is to send away the infant or to forbid any sputum positive case of tuberculosis from living in the same house as an infant.

Recommendations for further Study

When, however, all these causes have been considered, there is no doubt that the knowledge of diseases of infancy and the sick child has lagged considerably behind other branches of medicine and that until teaching centres and hospital authorities organise and equip the necessary departments for the study and teaching of paediatrics, the general standard of knowledge will remain low. As part of this organisation, further clinical research in the problems of the mother and the new born child should be made possible and

especially valuable will be work spent on the following problems :—

- 1—Prematurity and measures necessary for keeping alive premature infants.
- 2—The results of care and the factors necessary for the complete functional recovery of children born with signs of birth injury.
- 3—The factors necessary to maintain breast feeding and a study of those influences which operate so frequently to prevent it.
- 4—Study of the processes of infection in the newly born and the older infant.
- 5—We think also that the present investigation should serve as a basis for further clinical research as soon as circumstances permit and that it should be repeated as a group investigation.

Conclusion.

We recognise that the investigation just described is incomplete in so far as it has failed to reveal the predisposing and immediate causes of death in a large group of our cases ; but it is sufficient to demonstrate the real causes of death of infants in an industrial community of almost 300,000 people where the loss of infant life has always been heavy. It is hoped that the findings will dispel any thoughts that because the infantile mortality has shown a downward trend since the beginning of the century, all can be said to be well. Much has been done but much still remains and in so far as the causes of infant death are multiple and complex so will the reduction of these deaths to the biological minimum be the result of separate attacks upon the various causes. The type of problem in the first month is quite different from that after the first month.

There still can be detected a spirit of resignation towards infant deaths but to work to minimise the needless loss of infant life and thereafter to improve the care given to the surviving infant seems one of the most logical of all medical endeavours. In 1938 the deaths of 32,724 infants under the age of one year were recorded in England and Wales. Probably one third of these could have been avoided and it is our belief that by a conscious and united effort on the part of medical practitioners, public health services and hospitals working in conjunction with trained paediatricians, to reduce the infantile mortality of Newcastle upon Tyne to below 40 deaths per 1,000 live births would be a practical possibility.

*Summary.**Causes of Infantile Mortality in 1939.*

1—During the year the causes and circumstances of the deaths of 272 infants were studied. 138 deaths occurred within the first 28 days and 134 after the neo-natal period.

2—We considered that in at least one third of the cases the cause of death as given on the death certificate was inaccurate.

3—In 231 cases it was possible to express an opinion upon the cause of death.

4—The most important causes of death in the neo-natal period were prematurity (47 cases), birth-death (38 cases), neo-natal infection (15 cases), though it is possible that the actual incidence of neo-natal infection was greater than the apparent.

5—The chief causes of death after the first month were infective conditions which caused death in 90 out of 112 cases in which it was possible to express an opinion.

6—The nature of infectious disease in infancy being so difficult to define, it was not possible to assess with accuracy the proportionate ratio of various different infective conditions but we judged the types fell roughly into three main groups. Illnesses with respiratory symptoms 33 cases, alimentary symptoms 12 cases, and a large group of conditions of infections of unknown origin 32 cases.

7—The methods which might bring about a further reduction in infant deaths have been discussed.

Health Department,

Town Hall,

Newcastle upon Tyne.

November, 1941.

REFERENCES

1. Johnson, W.C. & Meyer, J.R., Amer. Journal, Obst. & Gynec. Vol. 9, No. 3, 1925.
2. Faber, S. & Sweet, L.K., Amer. Journal, Dis. Childhood., Vol. 42, page 2137, Dec. 1931.
3. MacGregor, A. Arch., Dis. Childhood., Vol. 14, No. 80, Dec. 1939.
4. Anderson, N.A. & Lyon, R.A., Amer. Journal, Diseases of Child. Vol. 58, pages 586-594, Sept. 1939.
5. Waller H. Clinical Studies in Lactation, chapters i., ii., Heinemann, London.
6. Cass, J.M., Arch. Dis. of Child., Vol. 15, No. 81, March, 1940.
7. See report on Public Health and Medical Subjects, No. 55, Infantile Mortality, H.M. Stat. Office 1929.
8. Grulee, C.G., Sanford, H.N., Herron, P.H., Jour. Amer. Med. Assoc. Vol. 103, pages 735-738. Sept. 1934.
9. Robinson, M., Arch. Dis. in Childhood Vol. 14, No. 79, Sept. 1939.
10. Crosse, V. M., Public Health, August 1939.
11. Bell J. A., Amer. Public Health Reports, 1st August, 1941.

Appendix A.

CITY AND COUNTY OF NEWCASTLE UPON TYNE

INVESTIGATION INTO INFANTILE MORTALITY

Name of child :

Address of parents :

Date of birth :

Date of death :

Sex :

1. District, exact address of family :

2. Living conditions of family :

(a) Rent (tenant or sub-tenant) :

(b) Accommodation (including bedrooms and beds) :

(c) Did parents occupy dwelling since birth of child, or if not, since when ?

(d) Number of occupants of dwelling :

(1) Under 15 years :—

UNDER

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

(Put stroke thus :— / under ages of children).

(2) Over 15 years —

(e) Health conditions of dwelling :—

(1) Type :—self-contained, flat, tenement. Old or modern property.

(2) Water—Laid on, carried. Bath. W.C. (Sole use or shared).

(3) Dampness.

(4) Cleanliness.

(5) Sunlight and outlook.

(f) Income, per week :—

	£	s.	d.
--	---	----	----

(1) Public Assistance Committee
---------------------------------	------	------	------

(2) National Health Insurance Benefits
--	------	------	------

(3) Unemployment Benefit
--------------------------	------	------	------

(4) Pensions
--------------	------	------	------

(5) Lodgers
-------------	------	------	------

(6) Sub-let rooms
-------------------	------	------	------

(7) Family
------------	------	------	------

(8) Any other source
----------------------	------	------	------

TOTAL WEEKLY INCOME

CHILD'S FAMILY

1. Morbid history of family during lifetime of infant.

2. Family circumstances (comfortable, moderate, poor)

3. Insurance.

- (a) If father or mother insured :
- (b) Was maternity benefit obtained. If so, how many ?
- (c) What medical facilities extended to the child :—
 - (1) Private Doctor.
 - (2) Club.
 - (3) Dispensary.
 - (4) Domiciliary Medical Service.

4. Father.

- (a) Age :
- (b) Health :
- (c) Nature of occupation (employer or employee, regularity, unemployment) :
- (d) Does he live with child's mother ?
If not, cause of separation :

5. Mother. Dead or living :

- (a) Date and cause of her death :
- (b) Age :
- (c) State of health :
- (d) Town or country bred :
- (e) Occupations :
 - (1) Before marriage, at home or outside :
 - (2) After marriage :
 - (3) Work during last pregnancy

(f) Previous pregnancies :

		Miscarriage, Still-birth, Living.	Healthy or Ailing.	If Dead, Cause and Age.
1st Pregnancy			
2nd	„		
3rd	„		
4th	„		
5th	„		
6th	„		
7th	„		
8th	„		
9th	„		
10th	„		

How many surviving children has the mother to look after ?

THE BIRTH

1. Pre-natal supervision (doctor, midwife, institution)

2. Birth

- (a) Place of birth (at home, elsewhere—maternity, midwife, hospital :
- (b) Attendance : doctor, midwife, unqualified person :
- (c) Character of labour (presentation, duration, obstetric complications, operative treatment, etc.) :
- (d) Lying-in period (normal, febrile, special nursing or medical treatment) :

THE INFANT

1. Child at birth (twin)

- (a) Still - born : foetal age :
- (b) Live-birth, whether premature :
- (c) General condition (normal, weakly, any congenital defects) :
- (d) Weight at birth ;

2. Civil Status

- (a) Legitimate :
- (b) Illegitimate :

3. Method of upbringing

- (a) In family, if elsewhere, with whom, why, where and since when ?
- (b) Quality of general management of infant :
- (c) Efficiency of mother :
- (d) Medical Supervision (attendance at infant welfare centre, private practitioner, etc.) :

4. Feeding

- (a) Breast only (period) :
- (b) Breast and artificial (period) :
- (c) Artificial only (period) and reason why :
- (d) Nature of artificial feeding :
 - Suitability in quantity and quality ?
 - Was milk used undiluted or otherwise ?
 - Was it boiled or pasteurised ?
 - Was any cereal or thickening added to feed ?

KEY TO SUMMARY OF CASE HISTORIES

Congenital malformations. (including mongolism and pyloric stenosis.)

Case Numbers—

4, 6, 55, 58, 63, 66, 70, 78, 101, 116, 124, 125, 131, 144, 152, 163, 166, 167, 177, 178, 181, 182, 194, 202, 203, 211, 254, 264, 266.

Birth-Death.

Case Numbers—

5, 28, 47, 49, 85, 95, 97, 104, 115, 118, 128, 136, 140, 148, 149, 151, 158, 160, 161, 165, 171, 173, 175, 184, 195, 196, 220, 225, 228, 232, 236, 243, 246, 250, 257, 262, 268, 272.

Prematurity (children with Birth Weight less than 5½ lbs. in whom no other cause of death was apparent).

Case Numbers—

10, 11, 54, 59, 60, 65, 72, 73, 76, 77, 80, 82, 87, 88, 91, 92, 102, 106, 111, 113, 126, 127, 130, 141, 155, 156, 157, 162, 190, 191, 197, 201, 204, 205, 209, 213, 221, 223, 224, 230, 238, 249, 252, 258, 263, 265, 269.

Infective Causes.

Respiratory infection (including otorrhœa).

Case Numbers—

7, 8, 12, 18, 19, 23, 24, 37, 48, 50, 52, 61, 67, 75, 83, 99, 110, 117, 122, 123, 132, 188, 200, 210, 212, 219, 233, 235, 248, 259, 261, 267, 273.

Alimentary Infection.

Case Numbers—

27, 31, 62, 81, 185, 186, 193, 206, 217, 218, 244, 253.

Infections of Unknown Origin

Case Numbers—

3, 9, 13, 17, 25, 33, 36, 39, 46, 53, 56, 57, 98, 107, 112, 121, 143, 145, 150, 168, 176, 183, 199, 207, 214, 215, 216, 234, 239, 240, 245, 247.

Other Infective Conditions

Case Numbers—

Staphylococcal infection—86, 208.

Streptococcal infection—26, 129, 229.

Other skin infections—89, 241.

Pertussis—20, 35, 51, 138, 142, 170, 180, 198, 231.

Tuberculosis—43, 45, 79, 109, 119, 255.

Diphtheria—21.

Congenital Syphilis—90.

Influenza—1.

Miscellaneous conditions.

Case Numbers—

Blood diseases of newborn—22, 41, 139, 226.

Pink disease—146, 147.

Intussusception—94.

Intestinal obstruction—256.

Accident

Case Numbers—

Scalds—34.

Asphyxia—96, 103, 133, 134, 222, 260.

Insufficient evidence for classification

Case Numbers—

14, 15, 16, 29, 30, 32, 38, 40, 42, 44, 48, 64, 68, 69, 71, 74, 84, 93, 100, 105, 108, 114, 120, 135, 137, 153, 154, 159, 164, 169, 172, 174, 179, 187, 189, 192, 227, 237, 242, 251, 270, 271.

Post Mortem findings on—

Case Numbers—

1, 8, 12, 17, 18, 19, 20, 24, 26, 31, 36, 37, 41, 43, 45, 46, 47, 51, 55, 56, 57, 63, 86, 89, 90, 94, 99, 103, 104, 109, 122, 123, 132, 136, 138, 145, 156, 163, 166, 169, 171, 176, 177, 180, 184, 202, 215, 227, 238, 243, 247, 255, 262, 268.

Appendix C.

KEY TO TABLE V. SHOWING DEATHS OF INFANTS AT VARIOUS AGES.

Age 0-1 Day

Cause of Death

Case Numbers

Congenital Malformations—125, 144, 166, 177, 182, 203, 211, 264.

Birth-Death—28, 85, 95, 97, 118, 128, 140, 149, 151, 158, 171, 173, 175, 184, 196, 220, 228, 232, 246, 257, 268, 272.

Prematurity—10, 11, 54, 65, 72, 76, 77, 82, 87, 92, 102, 106, 111, 126, 127, 141, 162, 190, 191, 197, 201, 204, 205, 209, 213, 221, 223, 263, 269.

Accidental Asphyxia—103, 260.

Insufficient evidence—187, 251.

Age -7 days

Congenital Malformations—58, 124, 194, 202, 254.

Birth-Death—5, 47, 49, 104, 115, 136, 148, 160, 165, 195, 236, 243, 250, 262.

Prematurity—59, 60, 73, 80, 88, 91, 113, 130, 156, 224, 249, 252, 258, 265.

Infection Unknown Origin—143.

Streptococcal Infection—129.

Blood Disease—22, 41, 139.

Insufficient Evidence—40, 44, 68, 71, 105, 192, 227.

Age -14 days

Congenital Malformations—55, 181.

Prematurity—230.

Acute Alimentary Infection—253.

Infection Unknown Origin—13, 107, 176.

Acute Skin Infection (pyogenic)—89.

Icterus Gravis Neonatorum—226.

Insufficient Evidence—164, 189, 270.

Age -21 days

Prematurity—155.

Acute Respiratory Infection—200.

Infection Unknown Origin—3, 183.

Pertussis—51

Insufficient Evidence—30, 74, 108, 120, 179.

Age -28 days

Birth-Death—161, 225.

Prematurity—157, 238.

Acute Staphylococcal Infection—208.

Accidental Asphyxia—222.

Insufficient Evidence—32, 137.

Age -12 weeks

Congenital Malformations—6, 78, 152, 163, 167, 266.

Respiratory Infection—19, 23, 37, 48, 52, 67, 99, 123, 259.

Alimentary Infection—62, 206, 217.

Infection Unknown Origin—9, 25, 36, 46, 53, 168, 207, 214, 239.

Acute Staphylococcal Infection—86.

Acute Streptococcal Infection—229.

Pertussis—35, 142.

Tuberculosis—119.

Congenital Syphilis—90.

Intestinal Obstruction—256.

Accidental Asphyxia—96.

Insufficient Evidence—14, 16, 29, 38, 42, 64, 69, 84, 100, 153, 174, 242, 271.

Age -24 Weeks

Congenital Malformations—63, 66, 101, 116, 178.

Acute Respiratory Infection—18, 24, 61, 110, 117, 122, 132, 219, 267.

Alimentary Infection—27, 31, 186, 193, 218, 244.

Infection Unknown Origin—33, 39, 56, 57, 112, 121, 145, 150, 215, 216, 245, 247.

Skin Sepsis—241.

Pertussis—138, 180, 198, 231.

Pink Disease—147.

Accidental Asphyxia—133, 134.

Accidental Scalds—34.

Insufficient Evidence—93, 135, 154, 169, 172.

Age -36 Weeks

Congenital Malformations—131.

Acute Respiratory Infection—7, 8, 50, 188, 210, 212, 233, 248, 273.

Alimentary Infection—81, 185.

Infection Unknown Origin—98, 240.

Acute Streptococcal Infection—26.

Diphtheria—21.

Pertussis—170.

Intussusception—94.

Pink Disease—146

Insufficient Evidence—15, 114, 237.

Age -52 Weeks

Congenital Malformations—4, 70.

Acute Respiratory Infection—12, 75, 83, 235, 261.

Infection Unknown Origin—17, 199, 234.

Influenza—1.

Pertussis—20.

Tuberculosis—43, 45, 79, 109, 255.

Insufficient Evidence—159.

SUMMARIES OF CASE HISTORIES

List of Abbreviations used :—

B.F.—Breast Fed.	P.P.H.—Post partum
B.W.—Birth weight	haemorrhage.
F.T.N.D.—Full term normal delivery.	A.P.H.—Ante partum
F.T.F.D.—Full term forceps delivery.	haemorrhage.
B.B.A.—Born before arrival of nurse	M.—Male.
or doctor.	F.—Female.
S.B.—Still born.	W.R.—Wassermann Reaction.
D.C.—Certified cause of death.	C.S.F.—Cerebro-spinal fluid.
Illeg.—Illegitimate.	

- No. 1.** M. 2nd child aged 10 months. B.F. 6 months. Except for left sided otorrhoea at 6 months thrived well till one month before terminal illness. Death due to meningitis caused by H. Influenzæ. D.C.—Influenzal meningitis.
- No. 2.** After investigation this child was found to have died on 31-12-38 and was therefore not included in the investigation.
- No. 3.** F. 6th child aged 16 days. F.T.N.D. B.W. 8 lbs. B.F. established. On 3rd day was admitted to hospital as the mother was also admitted with puerperal septicaemia. Thrived for a few days but on the 7th day after admission began to fail and lost weight till death on the 16th day. Diagnosis—Infection unknown origin, possibly 'hospital' syndrome. D.C.—Septicaemia.
- No. 4.** F. 2nd child aged 11 months. B.F. 7 months. Mongol child no illnesses except attack of bronchitis at 2 months till terminal acute respiratory infection causing death in 7 days from onset. Classified as congenital defect. D.C.—Broncho-pneumonia and Mongolism.
- No. 5.** F. 1st child aged 3 days. F.T.F.D. (apparently in absence of adequate indications) B.W. 8 lbs. well developed child, after birth developed cephalhaematoma, failed to suck and suffered from convulsions. Diagnosis Birth-Death. D.C.—Congenital debility.
- No. 6.** M. 1st child aged 6 weeks. F.T.N.D. B.W. 5lbs. 14 ozs. never B.F. at 6 weeks weighed 5lbs. 3 ozs. Congenital hypertrophic pyloric stenosis, operation, oedema following intravenous saline medication. Diagnosis—Pyloric stenosis : congenital defect. D.C.—Congenital hypertrophic pyloric stenosis
- No. 7.** M. adopted child aged 6 months. Never B.F. and B.W. not known but was healthy, thriving child till sudden attack of acute respiratory infection causing death in 6 days. Diagnosis—Acute respiratory infection. D.C.—Convulsions and broncho-pneumonia.
- No. 8.** M. 3rd child aged 7 months. B.F. only 2 weeks then dried milk. Thrived till 25th week when it had a 'cold and diarrhoea'. Final illness began with otorrhoea and bronchitis and one week later pneumonia and pericarditis. Diagnosis—Respiratory infection. D.C.—Broncho-pneumonia.
- No. 9.** M. 1st child aged 5 weeks. F.T.N.D. B.W. 8lbs. 6 ozs. Healthy born infant. Breast feeding not established, bottle from 11th day. Weight at 1 month 7 lbs. 4 days before death had a convulsion and some 'diarrhoea and vomiting'. Example of an acute terminal illness in a child who had never thrived. Diagnosis—Infection unknown origin. D.C.—Cardiac failure, convulsions and gastro-enteritis.

- No. 10.** M. 11th pregnancy, twin with No. 11 aged 9 hours. Premature 7 months pregnancy. B.W. 3lbs. 3ozs. Ante-natal care of mother, presence of twins not diagnosed. No precise details of post-natal care of children. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 11.** M. twin to above. Aged 1 hour 40 minutes. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 12.** M. 8th child aged 10 months. B.F. entirely. Thrived till admission to hospital with a unilateral otorrhoea and diarrhoea and vomiting. Death 16 days after onset. Grouped with the deaths due to respiratory infections. D.C.—Acute otorrhoea.
- No. 13.** F. 14th child. Premature. B.W. 5 lbs. easy forceps delivery. B.F. 10 days then dried milk. Took feeds well till 7th day and appeared healthy: then began to fail, looked pinched, and had difficulty with feeds. Finally on the 14th day died dehydrated. Diagnosis—Infection unknown origin in a premature child. D.C.—Atelectasis and prematurity.
- No. 14.** F. 3rd child aged 6 weeks. F.T.N.D. B.W. 7lbs. B.F. entirely. Was seen by doctor on one occasion only a short time before death. All family had colds; doctor had the impression that the child was not wanted. There was insufficient evidence for classification. D.C.—Congenital heart disease.
- No. 15.** F. 3rd child aged 7½ months. B.F. only 14 days. B.W. 10 lbs. At 3 months was in hospital with an attack of diarrhoea and vomiting. Nothing further known till child was found dead in bed; reported to Coroner. Insufficient evidence for classification. D.C.—Gastro-enteritis.
- No. 16.** M. 2nd child aged 17 weeks. B.W. 7lbs. 1 oz. B.F. only 3 weeks, no information regarding progress but child was circumcised 7 days before being found dead in bed. Reported to Coroner but there was insufficient evidence for classification. D.C.—Infantile convulsions.
- No. 17.** M. 8th child aged 9½ months. F.T.N.D. B.W. not known. Never B.F., never thrived, at nine months weighed 14 lbs. 6 ozs. Diarrhoea and vomiting 4 days before death. Diagnosis—Infection unknown origin in a child which never thrived. D.C.—Broncho-pneumonia, non-specific gastro-enteritis.
- No. 18.** F. 2nd child aged 3½ months. F.T.N.D. B.W. 7lbs. 4ozs.; at 3 months 8lbs. 11ozs. B.F. 10 days. did not thrive for 3 months. Diagnosis—Respiratory infection beginning as 'cold' and causing death in 4 days. D.C.—Broncho-pneumonia.
- No. 19.** M. 1st child aged 3 months. F.T.N.D. B.W. 6¼ lbs. Did not thrive well B.F. 9 weeks. Illness began with cough and ended in pneumonia 12 days later. Diagnosis—Respiratory infection. D.C.—Broncho-pneumonia.
- No. 20.** M. 9th child aged 10 months. F.T.N.D. B.W. 8 lbs. B.F. 6 months. Contact pertussis with brother aged 5. Child developed typical cough and died after 4 weeks. Diagnosis.—Pertussis. D.C.—Pertussis.
- No. 21.** M. 1st child (illeg.) aged 8 months. B.W. 9 lbs. 2 ozs., thrived well till final illness. Diphtheria causing death in 7 days, grandmother had positive throat swab. D.C.—Diphtheria.
- No. 22.** M. 5th child aged 5 days. B.W. 7½ lbs. F.T.N.D. Haemorrhagic disease of new-born beginning on 3rd day and fatal on 5th day. Parental blood given intramuscularly. Diagnosis.—Haemorrhagic disease of new-born. D.C.—Haemorrhagic disease of new-born.

- No. 23.** F. 2nd child aged 3 months. B.W. 4½ lbs. never B.F. Never thrived well and at time of terminal illness was probably about 6 lbs. Diagnosis—Acute respiratory infection terminating fatally on the 7th day. D.C.—Broncho-pneumonia.
- No. 24.** M. 4th child aged 5½ months. B.F. 14 days. Healthy born infant, developed pyloric stenosis and recovered completely after operation and thrived till final illness. Acute respiratory infection causing death in 8 days. Diagnosis—Respiratory infection. D.C.—Broncho-pneumonia.
- No. 25.** M. 6th child aged 8 weeks. B.F. 14 days. No record of progress obtained. Seen by doctor in the terminal stages of an infective illness, sunken and dehydrated, diarrhoea and vomiting. Diagnosis—Infection unknown origin. D.C.—Inanition and prematurity.
- No. 26.** M. 1st child (illeg.) aged 7 months. B.W. 8¾ lbs. B.F. 6 months. Healthy child, thrived well till 4 weeks before final illness. Attack of diarrhoea and vomiting, followed in 3 weeks by cervical adenitis, abscess drained and 3 days later erysipelas terminating in a streptococcal meningitis. Diagnosis—Acute streptococcal infection. D.C.—Streptococcal meningitis.
- No. 27.** M. 5th child aged 4 months. B.W. 6½ lbs. F.T.N.D. B.F. 2 months. Thrived till two days before death then after a certain feed was suddenly smitten with diarrhoea and vomiting which continued for 36 hours and caused death in 48 hours. Diagnosis—Acute alimentary infection. D.C.—Infantile convulsions : acute gastro-enteritis.
- No. 28.** F. 1st child aged 5 minutes. Ante-natal care, child known to be a breech, no version attempted. F.T. well developed infant born after a long labour as breech delivery in condition of asphyxia pallida. Diagnosis—Birth-Death. D.C.—Cerebral Haemorrhage Breech delivery.
- No. 29.** M. 1st child aged 6 weeks. B.W. 5½ lbs. B.F. 1 month then dried milk. Child found dead in bed, reported to Coroner. Insufficient evidence to indicate cause of death. D.C.—Infantile convulsions.
- No. 30.** F. 4th child aged 17 days. B.W. 5lbs. 6ozs. Caesarean section. B.F. 2 days then dried milk. Taken home by mother against advice and no evidence as to cause of death. D.C.—Inanition, Premature birth.
- No. 31.** F. 3rd child aged 15 weeks. F.T.N.D. B.F. 1 month, child did not thrive well. Placed in day Nursery, mother employed daily. Acute infection Flexner Dysentery. D.C.—Gastro-enteritis.
- No. 32.** M. 1st child aged 28 days. B.W. 6 lbs. F.T.N.D. B.F. Good progress till a few days before death, then was 'not well', found dead in bed. Reported to Coroner : no evidence as to cause of death. D.C.—Convulsions due to improper feeding.
- No. 33.** M. 1st child aged 4½ months. F.T. B.W. 7 lbs. 11 ozs. Child thrived for 3 months then had eczema on head. Final illness showed itself by 24 hours malaise followed by a 'fit' and death in a further 24 hours. Diagnosis—Acute infection unknown origin. D.C.—Broncho-pneumonia.
- No. 34.** M. 1st child (illeg.) aged 2½ months, never thrived properly. Death from sepsis following burns. Diagnosis—Accident. Cause of death, toxæmia following scalds, inquest held.
- No. 35.** M. 2nd child aged 5 weeks. B.F. entirely. Good healthy born child: shortly after birth of child the brother aged 4 developed pertussis. In three weeks child had a spasmodic cough suggesting pertussis and died in 11 days. Diagnosis—Pertussis. D.C.—Broncho-pneumonia and whooping cough.

- No. 36.** M. 1st child aged 7 weeks. Premature child weighing 3 lbs. 10½ ozs. on admission to hospital on 9th day. Slow progress was made for 4 weeks when the weight was 4 lbs. 3½ ozs. Then rise of temperature and loss of weight and death in 12 days. Diagnosis—Infection of unknown origin killing a premature child. D.C.—Inherent debility and premature birth.
- No. 37.** F. 2nd child aged 7½ weeks. B.F. only 14 days. F.T.N.D. Progress not known. Child found dead and case reported to Coroner. Post mortem showed broncho-pneumonia. Diagnosis—Acute respiratory infection.
- No. 38.** F. 10th. child aged 2½ months. B.F. only 7 days. F.T.N.D. Progress satisfactory. Found dead in pram., mother said infant had been quite well when fed some minutes previously. Reported to Coroner but no evidence of cause of death. Doctor's deposition. Cause of death infantile convulsions.
- No. 39.** F. 1st child aged 4 months. B.W. 6¾ lbs. B.F. only 4 weeks but thrived well until 14th week. Died after a short illness with convulsions. Diagnosis—Acute infection unknown origin. D.C.—Infantile Convulsions.
- No. 40.** M. 1st child aged 3 days, born after a normal labour said to be a blue baby and in 3 days cyanosis increased till death occurred. Not enough information available. D.C.—Congenital heart disease.
- No. 41.** M. 3rd child aged 2 days. F.T.N.D. B.W. 8lbs. Died with hæmorrhagic disease of newborn, hæmatemesis and melæna after administration of whole blood intramuscularly. D.C.—Hæmorrhagic disease of new-born.
- No. 42.** F. 4th child aged 5 weeks. B.F. entirely. Found dead, reported to Coroner, not enough evidence to give an opinion as to cause of death. Doctor's deposition. Cause of death a convulsive attack.
- No. 43.** F. 4th child aged 10½ months. B.F. 3 months. Appeared to thrive till 5 weeks before death then was fretful and vomited. Died miliary tuberculosis with meningitis. Father had pulmonary tuberculosis. D.C.—Tuberculous meningitis and pulmonary tuberculosis.
- No. 44.** M. 5th child aged 2 days. B.B.A. not weighed. Found dead in bed. No evidence as to cause, reported to Coroner. Mother epileptic and mentally defective. No post mortem. Cause of death, given in deposition as asphyxia.
- No. 45.** M. 2nd child aged 10½ months. F.T.N.D. B.W. 6 lbs. Mother had pulmonary tuberculosis. Child thrived well for 5½ months in care of aunt but had been exposed to infection for 2 weeks when the aunt had influenza and the child returned home. At 6½ months began to lose weight and have a cough. Died with miliary tuberculosis. D.C.—Generalised tuberculosis and pulmonary tuberculosis.
- No. 46.** F. 4th pregnancy. Twin child aged 7 weeks. F.T.N.D. B.W. 5 lbs. 3 ozs. Was admitted to hospital with an uncontrollable rectal prolapse. There died of acute infection, unknown origin, probably a ward infection. D.C.—Marasmus, severe recurrent rectal prolapse.
- No. 47.** M. 6th child aged 3 days. F.T.N.D. B.W. 8¼ lbs. At birth seemed healthy, then on 3rd day refused breast, became cyanosed and died. Diagnosis—Birth-Death. D.C.—Asphyxia and convulsions.
- No. 48.** M. 1st child aged 10½ weeks. B.F. 14 days then condensed milk; appeared to thrive well till terminal illness. Acute respiratory illness causing death in 6 days. D.C.—Influenza.

- No. 49.** M. 1st child aged 3 days. F.T.N.D. B.W. 8 lbs. Feeble infant from birth sucking till evening of 2nd day when it failed. Died on 3rd day. Diagnosis—Birth-Death. D.C.—Atelectasis and prematurity.
- No. 50.** M. 3rd child aged 8 months. B.F. 2 months. Apparently thrived till terminal illness. Father had a severe cold and child became affected. Finally found dead in bed. History suggested acute respiratory infection. Reported to Coroner. No post mortem, doctor's deposition broncho-pneumonia.
- No. 51.** F. 8th child aged 16 days. F.T.N.D. B.W. 8lb. B.F. entirely From birth was contact with pertussis : spasmodic cough on 12th day becoming worse till death on 16th with pneumonia. History of pertussis pneumonia. D.C.—Broncho-pneumonia.
- No. 52.** M. 7th child aged 10½ weeks. F.T.N.D. B.F. entirely and thrived well till final illness. Infection began with a cold progressing to broncho-pneumonia causing death in 5 days from onset. Diagnosis—Acute respiratory infection. D.C.—Broncho-pneumonia.
- No. 53.** M. 1st child aged 6 weeks. B.W. 5 lb. B.F. 2½ weeks. Child never thrived and died with a terminal infection. D.C.—Bronchitis and Inanition from birth.
- No. 54.** F. 6th Pregnancy. Aged 22 hours, 2 living children : premature. B.W. 3 lbs. 13 ozs. Death apparently due to prematurity. D.C.—Prematurity.
- No. 55.** F. 3rd. child aged 11 days. Twin. B.F. entirely. B.W. 3lbs. 14 ozs. Never thrived. Post mortem showed patent intraventricular septum. Diagnosis—Congenital morbus cordis. D.C.—Congenital atelectasis. Congenital abnormality of the heart, twin pregnancy prematurity.
- No. 56.** M. 10th child aged 12 weeks. Premature twin, 5 lbs. 3 ozs. Thrived for two months then had catarrhal nasal discharge and sent to hospital. There gained weight for 11 days, but then had rise of temperature, loss of weight then died in 10 days. Diagnosis—Infection unknown origin. D.C.—Neo-natal sepsis.
- No. 57.** M. 1st child aged 12½ weeks. F.T.N.D. B.W. 9 lbs. Never thrived. Admitted to hospital at 10 weeks weighing 8 lbs. 11 ozs. Thrived for 6 days then a rise of temperature, weight became stationary and then fell, loose stools and death 7 days later. Diagnosis—Infection unknown origin, possible ward infection. D.C.—Acute nephritis and infantile eczema.
- No. 58.** F. 3rd child aged 6 days. F.T.N.D. B.W. 7 lbs. 2 ozs. cyanosis on sucking, oesophageal obstruction and death on 6th day. Diagnosis.—Congenital deformity. D.C.—Broncho-pneumonia, congenital atresia of oesophagus.
- No. 59.** F. 1st child aged 2 days. Premature breech delivery. B.W. 2 lbs. 6 ozs., for 36 hours child seemed vigorous but died on the morning of the 3rd day. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 60.** M. 1st Pregnancy. Twin child aged 3 days B.W. 4 lbs. 2 ozs., other twin thriving. Mother albuminuria during pregnancy. Child was not a good colour at birth but sucked well for 2 days and then on the 3rd day collapsed and died. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 61.** F. 2nd child aged 4 months. B.F. 3 months. Illness began 14 days before admission to hospital, long illness of broncho-pneumonic type causing death after 42 days ; elder sister was ill at the same time with the same type of illness. Diagnosis—Respiratory infection. D.C.—Broncho-pneumonia.

- No. 62.** F. 1st child aged 2 months. F.T.N.D. B.W. 7½ lbs. Did not thrive, infantile eczema. Final illness was an acute diarrhoea and vomiting causing death in 4 days from onset. Diagnosis—Acute alimentary infection (no organisms isolated). D.C.—Acute infective gastro-enteritis of unknown origin.
- No. 63.** M. 3rd child aged 3 months. F.T. Breech birth. Thrived for 6 weeks then had repeated convulsive attacks with cyanosis most marked after feeds, finally causing death. Post mortem—Congenital heart disease. D.C.—Congenital heart lesion.
- No. 64.** F. 7th child aged 2 months. Premature child, mother suffering toxæmia of pregnancy. B.W. 3 lbs. Nursed in hospital, never thrived and had a fluctuating oedema of legs and lower part of body. Insufficient evidence for classification. D.C.—Inherent debility, premature birth.
- No. 65.** F. 2nd child aged 6 hours. Premature, B.W. 3 lbs., weakly child. Mother mitral stenosis and congestive heart failure throughout pregnancy and died 3 days after birth of child. Diagnosis—Prematurity. D.C.—Prematurity and maternal distress, severe mitral stenosis.
- No. 66.** F. 2nd child aged 3 months. B.W. 6 lbs. B.F. succeeded by bottle feeding. Child born with ascites. Was Mongol and failed to thrive. Final illness was acute respiratory infection lasting 3 days. Diagnosis—Congenital defect. D.C.—Broncho-pneumonia and congenital hydraemia.
- No. 67.** M. 1st child aged 5 weeks. F.T.N.D. B.W. 6 lbs. 13 ozs. B.F. 14 days then dried milk. Always had difficulty in breathing through nose and a foul nasal discharge (W.R. negative and no diphtheria bacilli present). Terminal respiratory infection. Diagnosis—Respiratory infection. D.C.—Neo-natal sepsis.
- No. 68.** M. 1st child (illeg.) F.T.N.D. B.B.A. B.W. 7 lbs. Thrived well for 3 days and then said to go blue and died 2 hours later. No evidence available and cause of death unknown. D.C.—Convulsions and atelectasis.
- No. 69.** F. 2nd child aged 5 weeks, twin pregnancy. Premature twin. B.W. 4 lbs.; other child S.B. B.B.A. precipitate labour. Child did not thrive and died after a fit. Insufficient evidence for classification. D.C.—Inanition and premature birth.
- No. 70.** F. 3rd child aged 11½ months. B.F. 3 months. Did not thrive and was known to have a congenital abnormality of the heart from birth. Final illness acute respiratory infection causing death in 6 days. D.C.—Broncho-pneumonia, congenital abnormality of heart.
- No. 71.** M. 1st child aged 7 days. F.T. Breech birth. B.F. Thrived for 4 days then became drowsy, refused feeds and died on the 7th day. Not enough evidence for classification. D.C.—Haemorrhage following delayed meningeal trauma following breech delivery.
- No. 72.** M. 5th child aged 12 hours. B.W. 2 lbs. 12 ozs. Premature birth, sudden rupture of membranes, hand presentation, version and rapid delivery of a cyanosed feeble child which died after a few hours. Diagnosis—Prematurity. D.C.—Inanition and premature birth.
- No. 73.** M. 1st child. Premature child. B.W. 3 lbs. 13 ozs. Mother toxæmia of pregnancy. At birth cried normally and sucked well for 3 days and then sudden stiffness, cyanosis and death. Diagnosis—Prematurity. D.C.—Convulsions and prematurity.

- No. 74.** M. 2nd child. Aged 20 days. F.T.N.D. B.F. 8 days. Vomiting from 8th day, operation but no pyloric tumour. Vomiting continued, child became dehydrated and died. Not sufficient evidence for classification. D.C.—Marasmus and pylorospasm.
- No. 75.** M. 4th child aged 11 months. B.F. 6 months. F.T. twin. Thrived till 8 months then pertussis. Final illness acute respiratory infection, onset 6 days before death. Diagnosis—Acute respiratory infection. D.C.—Broncho-pneumonia.
- No. 76.** M. 4th child aged 12 hours. Born by Caesarean section at 7 months mother had acute yellow atrophy of liver. Described as 'small living child' but no details of care. D.C.—Prematurity.
- No. 77.** M. 3rd child aged 2 hours. Premature child. B.B.A. at 7 months, complete cleft palate and hare lip. Diagnosis—Prematurity. D.C.—Premature birth.
- No. 78.** M. 4th child aged 9 weeks. B.F. 1 month then condensed milk. Vomited after 14 days, pyloric stenosis, operation wound broke down and child though gaining weight ran temperature. Autopsy showed purulent pericarditis. Diagnosis—Congenital defect. D.C.—Purulent pericarditis; operation for pyloric stenosis.
- No. 79.** F. 2nd child aged 10 months. F.T.N.D. B.F. 2 months. B.W. 8 lbs. Thrived till elder child contracted pertussis when the baby also became infected. Did not recover completely and later vomited and lost weight. Died miliary tuberculosis. No contact found but cousin in same street died 1 year before from tuberculous meningitis. D.C.—Tuberculous meningitis.
- No. 80.** M. 3rd child aged 2 days. Premature delivery 6½ months. B.W. 2 lbs. 13 ozs. Feeble child brought into hospital from the district, tube fed, died on 2nd day. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 81.** M. 3rd child aged 8½ months. F.T.N.D. Mixed B.F. and condensed milk, thrived well till 7 days before death when child became ill with sudden onset of diarrhoea with blood and mucus in stools, continuing intermittently till death on 8th day. Diagnosis—Acute enteric infection. D.C.—Broncho-pneumonia; gastro-enteritis.
- No. 82.** F. 4th child, premature birth. B.W. 2 lbs. 3¼ ozs. Mother 6 months pregnant; toxæmia and A.P.H. induced labour. Child cried feebly and died the following day. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 83.** M. 3rd child aged 8½ months. B.F. 8 weeks. Never healthy, umbilical sepsis, at 14 weeks attack of diarrhoea and vomiting then repeated attacks bronchitis till final illness, an acute respiratory infection. Diagnosis—Respiratory infection. D.C.—Broncho-pneumonia.
- No. 84.** M. 1st child (illeg.) B.F. entirely, aged 11 weeks. Child died after being found cyanosed in cot, not sufficient evidence for classification. D.C.—Convulsions and gastro-enteritis.
- No. 85.** M. 4th child aged 1 day. F.T.N.D. B.W. 9½ lbs. Seen by doctor in response to request from midwife. Child had purulent expectoration and signs at left base. Probably had inhaled liquor amnii. Diagnosis—Birth-death. D.C.—Pulmonary atelectasis.
- No. 86.** F. 1st child aged 2 months. B.F. entirely. Thrived well till 6 days before death. Skin rash beginning on face and becoming generalised. Pulmonary involvement and death in 6 days. Autopsy—Staphylococcus aureus isolated from skin bullae and lungs. Diagnosis—Acute Staphylococcal infection. D.C.—Pemphigus neonatorum.

- No. 87.** F. 1st child (3rd pregnancy) aged 6 hours. Mother admitted to hospital with acute congestive heart failure. Child born after forceps delivery, feeble cry and died in a few hours. Diagnosis—Prematurity. D.C.—Inherent debility and premature birth.
- No. 88.** M. 7th child aged 3 days, Premature child, mother in chronic ill health. B.W. $2\frac{1}{2}$ lbs., never cried or sucked. Diagnosis—Prematurity. D.C.—Premature birth.
- No. 89.** F. 1st child aged 8 days. F.T.N.D. B.W. $7\frac{1}{2}$ lbs. Mother had normal puerperium, child normal till 3rd day but then a skin rash appeared which in 2 days became bullous and generalised. Cord moist with pus at base. Progressive deterioration till death. Diagnosis—Acute skin infection. D.C.—Pemphigus neonatorum.
- No. 90.** F. 6th child aged 6 weeks. B.W. $7\frac{1}{4}$ lbs. born by Caesarean section, never thrived, admitted moribund with enlarged liver spleen and ascites. Blood and C.S.F. gave positive W.R. Diagnosis—Congenital syphilis. D.C.—Congenital specific disease.
- No. 91.** F. 4th pregnancy twin. Premature delivery. B.W. 3 lbs. 7 ozs. Recurrent attacks of cyanosis and death on the 2nd day. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 92.** F. Twin to above. B.W. 2 lbs. $14\frac{1}{2}$ ozs. died on 1st day. D.C.—Prematurity.
- No. 93.** F. 3rd child aged 5 months. F.T.N.D. B.W. $7\frac{1}{2}$ lbs. B.F. 2 months. Did not thrive and was found dead in bed. Reported to Coroner but not enough evidence for classification. Doctor's deposition gave convulsive fit as cause of death.
- No. 94.** F. 1st child aged 7 months. B.F. 2 weeks. B.W. 8 lbs. Thrived well till sudden illness which proved to be intussusception. Operation and five days later had sudden rise of temperature for 24 hours and became ill, later lost weight and died 3 weeks afterwards. Diagnosis—intussusception possibly complicated by ward infection. D.C.—Non specific gastro-enteritis; intussusception.
- No. 95.** F. 1st child aged 1 day. F.T.N.D. Child feeble at birth, head moulding, breathing difficult and unable to take feeds. 18 hours after birth, convulsions and death. Diagnosis—Birth-death. D.C.—Cerebral haemorrhage.
- No. 96.** F. 3rd child aged $9\frac{1}{2}$ weeks. F.T.N.D. B.W. $7\frac{1}{4}$ lbs. B.F. entirely. Thrived well from birth. One evening child was placed in cot after a feed; at the time of the next feed was found dead and blue. Diagnosis—Accidental asphyxia. Doctor's deposition gave convulsion as cause of death.
- No. 97.** F. 1st child aged 1 day. F.T. forceps delivery for uterine inertia after a prolonged labour. Blue when born and did not readily breathe, died in 14 hours. Patient an elderly primipara. Diagnosis—Birth-death. D.C.—Atelectasis (congenital).
- No. 98.** M. 1st child (twin) aged $5\frac{1}{2}$ months, never B.F., other twin died at 1 month; Premature child. B.W. $3\frac{3}{4}$ lbs. Never thrived, pneumonia at 4 months well for 1 month then a terminal illness lasting 13 days. Diagnosis—Infection unknown origin. D.C.—Heart failure, chronic bronchitis.

- No. 99.** M. 2nd child aged $2\frac{1}{2}$ months. F.T.N.D. B.W. $7\frac{3}{4}$ lbs. B.F. 5 weeks, never thrived properly, weight at $2\frac{1}{2}$ months 7 lbs. 10 ozs. Ill for 9 days, bilateral otitis media and mastoiditis with thrombosis of longitudinal sinus. D.C.—Thrombosis longitudinal sinus; bilateral otitis and mastoiditis.
- No. 100.** F. 1st child aged $2\frac{1}{2}$ months. B.W. 4 lbs. 12 ozs., thrived well. Dead when seen by doctor. Reported to coroner but insufficient evidence for classification. Doctor's deposition gave idiopathic convulsion as cause of death.
- No. 101.** F. 3rd child aged 16 weeks. F.T.N.D. B.W. 8 lbs. Large spina bifida and meningocele, not suitable for treatment. Diagnosis—Congenital abnormality. D.C.—Spina bifida with meningocele.
- No. 102.** F. 3rd child aged 1 hour. Premature birth before arrival of doctor or nurse. Born in a caul; Child blue and died almost immediately. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 103.** M. 3rd child (illeg.) aged 1 day. B.W. 4 lbs. 14 ozs. Child blue at birth but cried well. Following day was found cyanosed and dead in cot. Diagnosis—Accidental asphyxia. D.C.—Asphyxia, inherent debility, premature birth.
- No. 104.** M. 1st child aged 4 days. F.T.N.D. B.W. 5 lbs. 8 ozs. White and shocked at birth, breathing difficult, lived precariously 4 days, autopsy showed tentorial tear. Diagnosis—Birth-death. D.C.—Congenital heart disease.
- No. 105.** M. 2nd child aged 3 days. F.T.N.D. B.W. $8\frac{1}{2}$ lbs., for 2 days seemed normal but on 3rd day collapsed and died. Not enough evidence for classification. D.C.—Cardiac failure; congenital mitral stenosis.
- No. 106.** F. 2nd child aged 7 hours. Mother A.P.H. and toxæmia. Premature birth and feeble child dying after 6 hours. Diagnosis—Prematurity. D.C.—Inherent debility and premature birth.
- No. 107.** M. 1st child aged 11 days. Premature child. B.W. 3 lbs. 12 ozs. Child cried well but never thrived and gradually lost weight till 18th day. Mother had blepharitis in first week after confinement. Diagnosis—Infection unknown origin. D.C.—Marasmus. Premature birth.
- No. 108.** M. 11th child aged 17 days. B.W. $4\frac{1}{2}$ lbs. Feeble infant which refused to suck. On 4th day had discharging eyes and history of passage of blood per rectum. Not enough evidence to classify. D.C.—Prematurity.
- No. 109.** M. 1st child aged $8\frac{1}{2}$ months. F.T.N.D. B.W. 6 lbs. 15 ozs. B.F. 2 weeks then dried milk. Thrived well till 6 months then began to vomit and lose weight, died with generalised miliary tuberculosis. Mother died 4 months later from pulmonary tuberculosis. D.C.—Miliary tuberculosis.
- No. 110.** M. 1st child aged 20 weeks. B.F. 6 weeks. At 7 weeks weighed 7 lbs. 2 ozs. Thrived well and no illnesses till terminal acute respiratory infection causing death in 3-4 days after onset. Diagnosis—Acute respiratory infection. D.C.—Infantile convulsions, dentition and acute bronchitis.
- No. 111.** M. 1st child aged 30 minutes. Premature child. B.W. 4 lbs. 3 ozs. after induction of labour for toxæmia of pregnancy. Feeble at birth and died after 30 minutes. Diagnosis—Prematurity. D.C.—Prematurity.

- No. 112.** F. 6th child aged 14 weeks. B.F. 10 days. Thrived well and 3 days before death appeared quite well; on night before death was restless, found dead in bed. Reported to coroner. Death probably due to an infection of unknown origin. Doctor's deposition gave convulsions and gastro-intestinal disturbance as cause of death.
- No. 113.** M. 2nd pregnancy twin child aged 6 days. B.W. $3\frac{1}{2}$ lbs. Failed to thrive from birth, was too feeble to suck. Died on 6th day. Diagnosis—Prematurity. D.C.—Prematurity and twin.
- No. 114.** F. 3rd child aged 28 weeks (illeg.) F.T.N.D. B.W. 7 lbs. 15 ozs. B.F. few weeks. Healthy child found moribund one morning having been quite well the previous day. Not enough evidence for classification. D.C.—Broncho-pneumonia.
- No. 115.** F. 3rd child aged 2 days. F.T.N.D. B.W. $7\frac{1}{2}$ lbs. Feeble cry and difficulty with breathing. Unable to suck and died after 2 days. Diagnosis—Birth-death. D.C.—Marasmus; asphyxia neonatorum.
- No. 116.** M. 7th child aged 18 weeks. F.T.N.D. B.F. 6 weeks, failed to thrive and was known to have a congenital heart lesion. Death due to terminal acute respiratory infection causing death in 3 days after onset. D.C.—Myocardial failure, broncho-pneumonia.
- No. 117.** M. 3rd child aged 24 weeks (illeg.) F.T.N.D. B.W. $7\frac{1}{2}$ lbs. B.F. 10 weeks. Thrived for 10 weeks, at 14 weeks had attack of bronchitis and again at 19 weeks, but showed a constant gain in weight. Terminal respiratory infection causing death in 7 days. Diagnosis—Acute respiratory infection. D.C.—Acute bronchitis.
- No. 118.** F. 1st child aged 30 minutes. F.T. B.W. 6 lbs. 15 ozs. At 8 months was vertex presentation and was not examined again. Difficult breech delivery with extended legs and arms. Child feeble at birth and died in 30 minutes. Diagnosis—Birth-death. D.C.—Cerebral haemorrhage, breech extraction.
- No. 119.** M. 4th child aged 11 weeks. Premature child never thrived, seen 1 week before death with signs in chest and vomiting. Mother was known to have pulmonary tuberculosis and to have had positive sputum 10 months previously. Diagnosed as tuberculosis. D.C.—Marasmus and premature birth.
- No. 120.** M. 7th child aged 18 days. Premature child. B.W. 4 lbs. Failed to thrive and unable to suck. No evidence of actual cause of death other than prematurity. D.C.—Premature birth.
- No. 121.** M. 5th child aged 19 weeks. Weight at 3 weeks, 5 lbs. 1 oz. B.F. 1 month; 5 days before death attended Welfare Centre and was apparently thriving and then had a sudden illness with repeated 'convulsions', probably an acute infection unknown origin. D.C.—Cardiac failure and repeated fits.
- No. 122.** F. 3rd child (illeg.) aged 16 weeks. F.T.N.D. B.W. 6 lbs. B.F. 3 weeks thrived till 3 days before death. Then became cyanosed and ill with a respiratory illness. Diagnosis—Respiratory infection. D.C.—Cardiac failure, broncho-pneumonia.
- No. 123.** F. 3rd child aged 8 weeks. F.T.N.D. B.W. 7 lbs. 4 ozs. Never B.F., thrived for 6 weeks. Finally was ill and died on way to hospital. Reported to coroner and post mortem showed acute otitis media. Classified with respiratory infections. Doctor's deposition—Convulsions due to middle ear infection.

- No. 124.** M. 1st child aged 2 days. B.W. 4 lbs. 7 ozs., born with multiple fractures due to osteogenesis imperfecta and died after two days. Diagnosis—Congenital deformity. D.C.—Inherent debility and premature birth.
- No. 125.** M. 4th child aged about 30 minutes. Child hydrocephalic monster dying soon after birth. Diagnosis—Congenital defect. D.C.—Hydrocephalus and spina bifida.
- No. 126.** F. 2nd child aged few hours. Premature child B.W. 2 lbs. lived only a few hours. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 127.** M. 2nd child. Premature child, B.W. 4 lbs., feeble at birth and died in a few hours. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 128.** F. 2nd child aged 1 day. F.T.N.D. B.W. 6 lbs. 12 ozs. Feeble infant, attack of cyanosis followed by death in 24 hours. Diagnosis—Birth-death. D.C.—Congenital pulmonary stenosis.
- No. 129.** M. 1st child aged 5 days. F.T. forceps delivery after long labour; red forceps marks visible at birth, swollen on second day and purulent on third. Death occurred on 5th day. Infection haemolytic streptococcus. Mother died 2 days later. Diagnosis—Acute streptococcal infection. D.C.—Neo-natal sepsis.
- No. 130.** F. 1st child aged 4 days. Premature child B.W. 3 lbs. 5 ozs. On 4th day became cyanosed and died in convulsions. Diagnosis—Prematurity. D.C.—Cerebral haemorrhage.
- No. 131.** F. 1st child aged 35 weeks. F.T.N.D. B.W. 8 lbs. Large spina bifida unsuitable for treatment. No history of terminal illness. Diagnosis—Congenital defect. D.C.—Cardiac failure and spina bifida.
- No. 132.** M. 1st child aged 17 weeks. F.T. Caesarean section. B.W. 5½ lbs. weight on admission at 16 weeks 9½ lbs. Never B.F. but apparently thrived. 14 days before death right otorrhoea commenced; after 11 days ceased and child became very ill. Classified with respiratory infections. D.C.—Toxaemia, suppurating otitis media.
- No. 133.** F. 1st child aged 15 weeks. F.T.N.D. Mixed B.F. and dried milk, thrived well till found dead in bed with face buried in pillow. Death due to accidental asphyxia. Reported to coroner. Doctor's deposition—Asphyxia, suffocation, turned face into pillow while in cot.
- No. 134.** M. 5th child aged 12 weeks. F.T.N.D. Entirely B.F. Thrived, was found dead in bed, reported to coroner. Probably overlain. Diagnosis—Accidental asphyxia. Doctor's deposition—Asphyxia, overlain.
- No. 135.** M. 1st child (illeg.) aged 13 weeks. B.F. 5 weeks. F.T.N.D. B.W. 6 lbs. Infant apparently thrived well and no information as to final illness. Found dead and reported to coroner. Not enough evidence for classification. Doctor's deposition—Infantile convulsions.
- No. 136.** M. 4th child aged 2 days. Premature infant, mother A.P.H. placenta praevia. Precipitate labour. B.W. 5 lbs. 1 oz. very blue and feeble at birth, died in 2 days. Autopsy showed subarachnoid haemorrhage. Diagnosis—Birth-death. D.C.—Subarachnoid haemorrhage, prematurity.
- No. 137.** M. 2nd child aged 26 days. F.T. breech birth. B.W. 7 lbs. Never B.F. Appeared to thrive at first then history of intermittent diarrhoea for 14 days; looked pale and starved and finally found dead in bed. Not sufficient evidence for classification. D.C.—Cardiac failure, infantile convulsions due to gastritis.

- No. 138.** F. 3rd child aged 13 weeks. F.T.N.D. B.W. 8 lbs. B.F. 1 week. Typical spasmodic cough for 3 weeks. Sister contact. Diagnosis—Pertussis. D.C.—Broncho-pneumonia.
- No. 139.** M. 1st child aged 2 days. F.T. Forceps delivery. B.W. 6 lbs. 14 ozs. haematemesis 30 hours after birth. Intramuscular injections whole blood but bleeding continued and death occurred in 48 hours. Diagnosis—Haemorrhagic disease of newborn. D.C.—Melaena neonatorum.
- No. 140.** F. 10th child aged 1 day. Premature child feeble at birth. B.W. 5 lbs., convulsions and Cheyne-Stokes breathing in 10 hours and death in 24 hours. Mother died P.P.H. Diagnosis—Birth-death. D.C.—Prematurity.
- No. 141.** M. 3rd child. Premature child too small to weigh died after 3 hours. Diagnosis—Prematurity. D.C.—Inanition, prematurity.
- No. 142.** M. 3rd child aged 11 weeks. F.T.N.D. B.W. 7 lbs. B.F. only 3-4 weeks. Paroxysmal cough of pertussis for 3 weeks before death. Contact with other children in same house suffering from pertussis. Diagnosis—Pertussis. D.C.—Convulsions, malnutrition and pertussis.
- No. 143.** M. 1st child aged 3 days. F.T.N.D. B.W. 5½ lbs. Blue child with cord round neck, sucked well but failed to thrive and on the 3rd day shortly before death a quantity of pus was discharged from the left nostril. Diagnosis—Acute infection unknown origin. D.C.—Debility and prematurity.
- No. 144.** F. 3rd child aged 45 minutes. F.T. Breech delivery. B.W. 7¾ lbs. child born with hydrocephalus and meningocele. Diagnosis—Congenital deformity. D.C.—Inanition and hydrocephalus.
- No. 145.** F. 2nd child aged 14 weeks. F.T.N.D. B.W. 8½ lbs. Never B.F. Never thrived, weight at 3 months 9½ lbs. Final illness diarrhoea for 2 weeks, dying dehydrated. Diagnosis—Infection of unknown origin. D.C.—Infective gastro-enteritis.
- No. 146.** F. 1st child aged 27 weeks. F.T.N.D. B.W. 6 lbs. 14 ozs. B.F. 5 weeks. Typical Pink disease died 1 week after discharge from hospital. Probably terminal complicating infection. D.C.—Cardiac failure and Pink disease.
- No. 147.** F. 1st child aged 18 weeks. F.T.N.D. B.W. 7 lbs. 4 ozs. B.F. 2 months then dried milk. Thrived for 1st month. Pink disease, died four days after discharge from hospital. Terminal infection complicating Pink disease. D.C.—Convulsions and Pink disease.
- No. 148.** F. 2nd child aged 2 days. F.T.N.D. Child born with asphyxia pallida, died second day after an umbilical haemorrhage. Diagnosis—Birth-death. D.C.—Atelectasis.
- No. 149.** M. 1st child (illeg.) aged 1 day. Full term forceps delivery for foetal distress. B.W. 5 lbs. 12 ozs. Child white at birth, did not suck and died in 24 hours. Diagnosis—Birth-death. D.C.—Inanition.
- No. 150.** F. 1st child aged 12 weeks. F.T.N.D. B.W. 7 lbs. 14 ozs. B.F. 2 weeks, child never thrived, at 9 weeks began to have vomiting and foul motions. Sent to hospital and after 15 days was sent home. Diarrhoea began again and child died soon after leaving hospital. Diagnosis—Infection unknown origin. D.C.—Infantile diarrhoea.

- No. 151.** M. 1st child aged 1 day. At 1 month before confinement was vertex presentation and the patient was not again examined. Rapid breech delivery. B.W. $5\frac{1}{2}$ lbs.; at birth appeared well but had grunting respirations, died without convulsions or other signs 24 hours later. Diagnosis—Birth-death. D.C.—Cardiac failure, prematurity.
- No. 152.** M. 3rd child aged 5 weeks. B.F. 2 weeks. Bad spina bifida unsuitable for operation. Diagnosis—Congenital deformity. D.C.—Spina bifida.
- No. 153.** M. 3rd child (illeg.) twin aged 6 weeks. Premature. B.W. $3\frac{1}{2}$ lbs. B.F. entirely. The night before death was put to bed apparently well and at 7 a.m. next morning discovered moribund. Possibly an acute infection but no direct evidence other than prematurity. Insufficient evidence for classification. D.C.—Convulsions, prematurity and haematuria.
- No. 154.** M. 2nd child aged 13 weeks. F.T.N.D. B.W. 6 lbs. B.F. 2-3 weeks. Thrived till terminal illness which lasted three days beginning with convulsions third day died in a 'fit' probably an acute infection but insufficient evidence to classify. D.C.—Idiopathic convulsions.
- No. 155.** M. 9th pregnancy, child aged 17 days. Twin to No. 157, premature twin pregnancy, both children taken to hospital but moribund on admission. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 156.** F. 9th child aged 6 days. Premature child. B.W. 2 lbs. 1 oz. very feeble at birth, sucked well but became progressively feeble and died on 6th day. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 157.** M. 9th pregnancy, child twin to No. 155, aged 26 days. D.C.—Prematurity.
- No. 158.** M. 1st child aged 1 day, premature 2 months. B.B.A. white and shocked at birth, never breathed properly and died in 12 hours. Diagnosis—Birth-death. D.C.—Prematurity.
- No. 159.** F. 2nd child aged 38 weeks. F.T.N.D. B.W. 7 lbs. 10 ozs. B.F. only 3 days. Never thrived; was a mongol and died in night being found dead in bed. Reported to coroner; not enough evidence to classify. Doctor's deposition—Infantile convulsions due to gastritis.
- No. 160.** F. 13th child aged 4 days. F.T. difficult labour with forceps. Did not breathe normally, never able to suck, jaundiced, on 4th day collapsed and died. Diagnosis—Birth-death. D.C.—Icterus neonatorum.
- No. 161.** M. 1st child aged 23 days. F.T. trial labour. B.W. 7 lbs. 10 ozs. Several attacks of cyanosis in hospital. Seen by doctor in comatose condition day before death. Classified as Birth-death. D.C.—Infantile convulsions.
- No. 162.** F. 3rd child aged 1 day. Premature birth, B.W. $2\frac{1}{2}$ lbs. No other abnormalities but turned cold after 12 hours and died after 24 hours. Diagnosis—Prematurity. D.C.—Premature birth.
- No. 163.** M. 2nd child aged 6 weeks. F.T.N.D. B.F. 12 days. Admitted to hospital with symptoms of acute intestinal obstruction and history of chronic constipation. Thought to be due to colonic dysfunction classified as congenital defect. D.C.—Cardiac failure, intestinal obstruction, spasm of pelvi-rectal junction of colon.
- No. 164.** M. 1st child (illeg.) aged 9 days, seen by doctor in moribund condition; not enough evidence for classification. D.C.—Cardiac failure, feebleness, prematurity.

- No. 165.** M. 8th child aged 2 days. B.W. 5 lbs. Premature twin blue at birth after breech delivery. Condition feeble and lived only 2 days. Diagnosis—Birth-death. D.C.—Prematurity.
- No. 166.** F. 4th child aged 1 day. F.T.N.D. Child born deeply cyanosed, died after 1 day, autopsy showed congenital pulmonary stenosis. Diagnosis—Congenital deformity. D.C.—Congenital defect of the heart.
- No. 167.** M. 4th child aged 9 weeks. F.T. forceps delivery. B.F. 2 weeks. B.W. 9 lbs. failed to thrive and doctor considered child mentally defective. Diagnosis—Congenital defect. D.C.—Imperfect development, agenesis cerebri.
- No. 168.** M. 2nd child aged 6 weeks. F.T.N.D. B.W. 8 lbs. 5 ozs. Thrived for 4 weeks, sudden illness with loss of weight and dehydration causing death in 14 days. Diagnosis—Infection unknown origin. D.C.—Enteritis.
- No. 169.** M. 1st child (illeg.) aged 12 weeks. F.T.N.D. B.W. 8 lbs. 2 ozs. Thrived till 1 one week before death when it had an attack of mild wheezing but no pyrexia and was well next day. On day of death appeared quite well at 2 p.m. and at 5 p.m. was found dead in its pram. Not sufficient evidence for classification. Nothing found at post mortem. D.C.—Enlarged thymus.
- No. 170.** M. 3rd child aged 29 weeks. F.T.N.D. B.F. entirely and thrived well. 2 older children in family developed pertussis and 16 days later the infant developed a typical cough of pertussis and died 3 weeks later. Diagnosis—Pertussis. D.C.—Pneumonia.
- No. 171.** M. 7th child aged few hours. F.T.N.D. but no adequate history child born in asphyxia pallida died after few hours. Diagnosis—Birth death. D.C.—Asphyxia livida.
- No. 172.** F. 7th child aged 21 weeks. B.W. 6½ lbs. Never B.F. Was seen by doctor only when moribund. Not sufficient evidence for classification. D.C.—Convulsions, marasmus.
- No. 173.** M. 5th child aged few minutes. F.T. forceps delivery, large child born after 48 hours labour with difficulty in delivery of shoulders. Diagnosis—Birth-death. D.C.—Difficult labour.
- No. 174.** F. 3rd child aged 6 weeks. B.W. 4½ lbs. B.F. 7 days. Terminal illness of undefined duration with diarrhoea as predominating symptom. Not sufficient evidence for classification. D.C.—Infantile convulsions, gastro-enteritis.
- No. 175.** M. 2nd child (illeg.) aged few minutes. F.T.N.D. B.B.A. found in bed apparently drowned in a pool of liquor amnii. Diagnosis—Birth-death. D.C.—Atelectasis, prematurity.
- No. 176.** M. 1st child aged 10 days. F.T.N.D. B.W. 7 lbs. B.F. entirely. For 5 days showed no signs apart from two transitory attacks of cyanosis, sudden collapse on 9th day, respiratory distress and death following day. Mother puerperal sepsis on 5th day. Diagnosis—Acute infection unknown origin. D.C.—Broncho-pneumonia.
- No. 177.** F. 2nd child aged 1 day. F.T.N.D. B.W. 6 lbs. 4 ozs. Swelling of abdomen with vomiting, no passage of meconium. Death in 23 hours. Intestinal obstruction due to volvulus. Diagnosis—Congenital deformity. D.C.—Congenital duodenal atresia.
- No. 178.** F. 13th child aged 14 weeks. F.T.N.D. Child was a mongol failed to thrive and was found dead in bed. Diagnosis—Congenital abnormality. D.C.—Prematurity.

- No. 179.** M. 3rd child aged 18 days (twin). F.T.N.D. B.W. 4 lbs. Never thrived was 'a waster from the beginning.' B.F. entirely. No definite illness. Diagnosis—Prematurity. D.C.—Infantile convulsions.
- No. 180.** M. 2nd child aged 14½ weeks. F.T.N.D. B.W. 7½ lbs. B.F. 14 days. Apparently thrived till spasmodic cough developed at 13 weeks and then died on 10th day of illness. Contact pertussis, elder sister developing cough 14 days before infant. Diagnosis—Pertussis. D.C.—Bronchopneumonia, pertussis.
- No. 181.** M. 2nd child aged 7 days. F.T.N.D. Congenital abnormality with oesophageal atresia and oesophago-tracheal fistula. D.C.—Congenital atresia of oesophagus.
- No. 182.** F. 4th child (illeg.) aged 1 day. Premature twin, imperforate anus - operation and death in 24 hours. Diagnosis—Congenital abnormality. D.C.—Inherent debility, prematurity, imperforate anus.
- No. 183.** F. 5th child aged 16 days. F.T.N.D. B.W. 6 lbs. Never B.F. left hospital on 5th day apparently well and re-admitted 10 days later weight 4½ lbs. and vomiting. Convulsions and difficulty in breathing. Diagnosis—Acute infection unknown origin. D.C.—Dehydration.
- No. 184.** F. 1st child aged 1 day. F.T. B.W. 5 lbs. 1 oz. 25 hours labour : child drowsy with fits for 12 hours before death. Diagnosis—Birth-death. D.C.—Intracranial haemorrhage, normal delivery.
- No. 185.** M. 4th child aged 8 months. B.F. then dried milk. Sudden illness in a healthy child, diarrhoea and vomiting with blood and mucus in stools. Diagnosis—Dysentery (Sonne). D.C.—Gastro-enteritis.
- No. 186.** M. 1st child aged 15 weeks. F.T.N.D. B.W. 7 lbs. 14 ozs. B.F. 1 month and then dried milk. Thrived well for three months, then diarrhoea began with mucus in stools. Diarrhoea most severe 3 days before death. Diagnosis—Infection, probably alimentary. D.C.—Gastro-enteritis.
- No. 187.** M. 1st child aged 12 hours. Premature child B.W. 4 lbs. 9 ozs. Died after 12 hours but not sufficient evidence for classification. D.C.—Respiratory failure : prematurity.
- No. 188.** M. 1st child aged 6 months. F.T.N.D. B.W. 9½ lbs. Never B.F. Thrived well till before final illness which began as bronchitis and was fatal in 1 week. Diagnosis—Respiratory infection. D.C.—Bronchitis.
- No. 189.** M. 8th pregnancy 4th child aged 9 days. F.T.N.D. B.W. 7½ lbs. Said to be jaundiced from birth, did not suck, no bleeding and died on 9th day. Not sufficient evidence for diagnosis. D.C.—Icterus neonatorum, debility from birth.
- No. 190.** F. aged 1 day. Child born at 7 months by Caesarean section. (Mother had ruptured uterus) lived only few hours. No information as to condition. Diagnosis—Prematurity. D.C.—Premature birth.
- No. 191.** M. 5th child aged 1 hour. Premature child, small feeble. Diagnosis—Prematurity. D.C.—Atelectasis : Prematurity.
- No. 192.** F. aged 2 days. 2nd child (illeg.) Very small premature child weighing about 3 lbs. Insufficient evidence for classification. D.C.—Prematurity.

- No. 193.** F. 13th child aged 17 weeks. B.W. 7 lbs. Never B.F. Thrived well till sudden attack of vomiting and diarrhoea with blood and mucus in the stools. Death on 5th day. Diagnosis—Acute alimentary infection. D.C.—Acute gastro-enteritis.
- No. 194.** F. 4th child aged 3 days. B.W. 6 lbs. 12 ozs. F.T.N.D. Asphyxia livida at birth becoming progressively more cyanosed till death. Was probably a mongol. Diagnosis—Congenital defect. D.C.—Congenital heart disease and mongol.
- No. 195.** M. 1st child (twin) aged 2 days. B.W. 9 lbs. 6 ozs. F.T. forceps, indication maternal distress; child born with good colour but did not suck, following day was jaundiced and cyanosed and on the third day died. Diagnosis—Birth-death. D.C.—Marasmus, prolonged labour.
- No. 196.** F. 1st child aged 1 hour. F.T. forceps; indication foetal distress, child never breathed normally and did not cry. Diagnosis—Birth-death. D.C.—Cardiac failure, atelectasis.
- No. 197.** M. 2nd child aged few hours. Premature child. B.W. 4 lbs. Feeble cyanosed child not responding to treatment. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 198.** F. 1st child aged 19 weeks. B.F. entirely. B.W. 5 lbs. 3 ozs. Typical pertussis began 3 weeks before death, died in a coughing fit. Diagnosis—Pertussis.. D.C.—Convulsions and pertussis.
- No. 199.** M. 4th child aged 37 weeks. F.T.N.D. B.W. $8\frac{1}{2}$ lbs. Thrived well (B.F. 4 weeks only) then 14 days before death had a sudden attack of diarrhoea and vomiting; improved then a fatal relapse. Diagnosis—Infection unknown origin. D.C.—Gastro-enteritis.
- No. 200.** M. 4th child aged 18 days. F.T.N.D. B.W. $7\frac{3}{4}$ lbs. B.F. 7 days. Never thrived and was seen by doctor in a final illness with respiratory signs lasting only a few days. Diagnosis—Acute respiratory infection. D.C.—Broncho-pneumonia.
- No. 201.** M. 2nd child aged few hours. Premature child. B.B.A. B.W. 3 lbs. 2 ozs. born in asphyxia livida, cried for a few minutes became feeble and died in 7 hours. D.C.—Prematurity.
- No. 202.** F. 11th child aged 4 days. F.T. B.W. 8 lbs. 14 ozs. Congenital meningo-encephalocele. Diagnosis—Congenital defect. D.C.—Congenital meningocele and encephalocele.
- No. 203.** F. 3rd child aged 30 minutes; born anencephalic 'monster'. Diagnosis—Congenital defect. D.C.—Malformation and prematurity.
- No. 204.** F. 1st pregnancy aged 2 hours. Premature twin birth. A.P.H. placenta praevia, child weighed $1\frac{1}{2}$ lbs. and died after $1\frac{1}{2}$ hours. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 205.** M. twin to above. Lived only a few minutes. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 206.** F. 1st child (illeg.) aged 6 weeks. F.T.N.D. Never thrived, non-gonococcal ophthalmia neonatorum and diarrhoea, sent to hospital and 1 week after admission had B. Aertryke in stools. Died one month later. Diagnosis—Alimentary infection. D.C.—Food poisoning due to B. Aertryke.

- No. 207.** M. 4th child aged 7 weeks. F.T.N.D. B.W. 8½ lbs. B.F. 6 weeks. Apparently thrived till 5 days before death when it had a slight rash and was off colour. Appeared to progress favourably then had sudden fit and died. Diagnosis—Acute infection unknown origin. D.C.—Infantile convulsions and measles.
- No. 208.** M. 5th child aged 24 days. F.T.N.D. B.W. 7 lbs. On 5th day developed a swelling of mastoid region, on 13th day a right cervical abscess, 18th day right otorrhoea and on 22nd day swelling of right leg—incised and death followed in 18 hours. Staphylococcal aureus isolated from wounds. Mother had pyrexia 100°-104° on 8th-9th days. Diagnosis—Staphylococcal infection of newborn. D.C.—Toxic myocarditis and neonatal sepsis.
- No. 209.** F. 1st child (illeg.). Doctor not called till after birth of child. Small child just viable, lived a few hours. Diagnosis—Prematurity. D.C.—Asthenia and prematurity.
- No. 210.** F. 3rd child (illeg.) aged 30 weeks. F.T.N.D. B.W. 8½ lbs. B.F. 3 weeks but never thrived. Probably died with an acute infective illness of respiratory type. D.C.—Convulsions and acute pneumonia.
- No. 211.** M. 11th child aged 12 hours. Hydrocephalus and spina bifida. Diagnosis—Congenital defect. D.C.—Hydrocephalus spina bifida.
- No. 212.** M. 1st child (illeg.) aged 30 weeks. F.T.N.D. B.W. 7 lbs. B.F. only 3 weeks. Thrived till terminal illness which was an acute respiratory infection. Diagnosis—Respiratory infection. D.C.—Acute broncho-pneumonia.
- No. 213.** F. 1st child aged 4 hours. Premature child B.W. 2 lbs. Poor condition at birth. Diagnosis—Prematurity. D.C.—Asthenia.
- No. 214.** M. 1st child aged 10 weeks. Premature twin. B.W. 4 lbs. Never B.F., at 9 weeks was said to be still jaundiced, 9 days later was admitted to hospital with a three day history of diarrhoea. Diagnosis—Acute infective illness of unknown origin. D.C.—Gastro-enteritis.
- No. 215.** M. 3rd child (illeg.) aged 12½ weeks. F.T.N.D. B.W. 7¼ lbs. Seen moribund at 12 weeks weighing 6 lbs. 4 ozs. and died 18 hours later. Diagnosis—Acute infective illness. D.C.—Broncho-pneumonia.
- No. 216.** F. 5th child aged 19 weeks. F.T.N.D. B.W. 8 lbs. B.F. 1 month. Apparently thrived till 2-3 days before death. Then had diarrhoea and vomiting but doctor was not called. Died suddenly, reported to coroner. Diagnosis—Acute infective illness of unknown origin. Doctor's deposition—Infantile convulsions.
- No. 217.** M. 3rd child aged 5 weeks. F.T.N.D. B.W. 9 lbs. B.F. 3 weeks. Seen by doctor the day before death, ill with severe diarrhoea and vomiting for 3 days. Diagnosis—Acute alimentary infection. D.C.—Convulsions and asthenia.
- No. 218.** M. 10th child aged 21 weeks. F.T.N.D. B.W. 9 lbs. B.F. 6 days, did not thrive. Final illness said to date from vaccination, for 3 days afterwards acute diarrhoea with blood in stools. Death after 16 days. Diagnosis—Acute alimentary infection. D.C.—Gastro-enteritis.
- No. 219.** M. 2nd child aged 18 weeks. F.T.N.D. B.W. 6 lbs. B.F. 2 weeks. Apparently thrived till terminal illness which began as bronchitis and after 5 days was found dead in bed. Diagnosis—Acute respiratory infection. D.C.—Convulsions, acute bronchitis.

- No. 220.** M. 10th child aged 12 hours. F.T. 16 days before delivery was a vertex presentation, no further examination. Breech delivery with extended legs. Child did not breathe spontaneously and lived only 12 hours. Diagnosis—Birth-death. D.C.—Atelectasis, breech birth.
- No. 221.** F. 1st child aged few hours. Premature labour. B.W. $4\frac{1}{2}$ lbs. Feeble cyanosed child dying after 4 hours. Diagnosis—Prematurity D.C.—Prematurity.
- No. 222.** M. 1st child aged 26 days. F.T.N.D. B.W. $9\frac{1}{2}$ lbs.. B.F. entirely, child thrived perfectly. Death overlaying, accidental asphyxia Inquest —Suffocation and overlaying.
- No. 223.** M. 2nd child aged 1 day. Toxaemia of pregnancy. Twin pregnancy. B.W. 5 lbs. 4 ozs. Cyanosed child with difficulty in breathing died after one day. Diagnosis—Prematurity. D.C.—Prematurity and debility.
- No. 224.** M. Twin to 223. Aged 2 days. B.W. 4 lbs. 12 ozs. Breech birth with much liquor and mucus in mouth at birth. Suddenly became blue and died frothing at the mouth. Diagnosis —Prematurity. D.C.—Prematurity and debility.
- No. 225.** M. 7th child aged 23 days. F.T.N.D. B.W. 6 lbs. B.F. entirely Child born in condition of asphyxia pallida, and never thrived. Diagnosis—Birth-death. D.C.—Inanition, congenital heart disease.
- No. 226.** M. 6th child aged 8 days. F.T.N.D. B.W. 11 lbs. B.F. Jaundiced from 2nd day with evidence of anaemia, liver and spleen enlarged. Admitted to hospital just before death. Diagnosis—Icterus gravis neonatorum (erythroblastosis foetalis). D.C.—Splenic anaemia.
- No. 227.** M. 1st child aged 2 days. F.T.N.D. B.W. $7\frac{1}{2}$ lbs. Deeply cyanosed from birth, cried and sucked vigorously. Autopsy did not reveal adequate anatomical diagnosis. Not sufficient evidence to classify. D.C.—Congenital heart disease.
- No. 228** M. 10th child. F.T.F.D. B.W. 9 lbs. Refused to suck and unable to swallow, death after 12 hours following a convulsion. Diagnosis—Birth-death. D.C.—Debility from birth.
- No. 229.** M. 1st child aged $9\frac{1}{2}$ weeks. F.T.N.D. B.W. 6 lbs. 7 ozs. B.F. Mother normal puerperium except "head cold". Child normal to 9th day then following day had temperature 103° , then illness of 56 days with many scattered bony lesions due to haemolytic streptococcal infection. Diagnosis—Acute infection with strept. haemolyticus. D.C.—Cardiac failure, myocardial degeneration, streptococcal osteitis of left femur.
- No. 230.** M. 1st child aged 10 days. Premature child. B.W. 3 lbs. 14 ozs. Forceps delivery. Apparently made good progress till 9th night when it vomited, turned "queer" and suddenly died. Diagnosis—Prematurity. D.C.—Atelectasis and prematurity.
- No. 231.** F. 3rd child aged $14\frac{1}{2}$ weeks. F.T.N.D. B.W. 7 lbs. B.F. 2 weeks. Had cough suggesting pertussis for 1 month, was very ill for 3 days and found dead in bed. Reported to coroner. Diagnosis—Pertussis, contact other children in family. D.C.—Broncho-pneumonia following whooping cough.
- No. 232.** F. 2nd. child aged only a few minutes. Mother had a precipitate labour. B.B.A. before any attention was obtained. Diagnosis—Birth-death. D.C.—Shock due to precipitate labour.

- No. 233.** F. 15th child aged 27½ weeks. Never B.F. Terminal illness an acute respiratory infection beginning with coryza and lasting 5 or 6 days. Diagnosis—Acute respiratory infection. D.C.—Broncho-pneumonia.
- No. 234.** M. 3rd child aged 40 weeks. F.T.N.D. B.W. 7 lbs. 4 ozs. B.F. 2 months. Thrived well, "off colour" 9 days before death and 2 days later diarrhoea and vomiting and cough. These continued and on 9th day child died in a fit. Diagnosis—Acute infective illness of unknown origin. D.C.—Convulsions and Gastro-enteritis.
- No. 235.** M. 1st child aged 11 months. F.T.N.D. Never thrived. B.F. only 2 weeks. At 9 months had diarrhoea and vomiting and was ill for 10 days. Terminal illness of 5 days duration was acute respiratory infection. Diagnosis—Respiratory infection. D.C.—Broncho-pneumonia.
- No. 236.** M. 3rd child aged 5 days. F.T. Difficult forceps delivery, child had Erb's palsy and on 4th day convulsions. Diagnosis—Birth-death. D.C.—Convulsions, Erb's paralysis, child birth.
- No. 237.** M. 1st child aged 29½ weeks. F.T.F.D. B.F. 3 weeks. Died of illness lasting 4 days but no definite details available for classification. D.C.—Convulsions; Gastro-enteritis.
- No. 238.** M. 7th child aged 25 days. Twin, premature child. B.W. 4½ lbs. Child never thrived, admitted moribund to hospital 2 days before death. No evidence other than prematurity. D.C.—Prematurity.
- No. 239.** M. 4th child aged 8 weeks. Premature child. B.W. 5 lbs. B.F. 3 weeks. Never thrived and always had cough. At 6 weeks "broncho-pneumonia" and temperature 103° for four days. Condition varied and finally was found dead in bed. Diagnosis—Acute Infection unknown origin. D.C.—Broncho-pneumonia.
- No. 240.** F. 11th child (adopted) aged 26½ weeks. Apparently thrived till attack of diarrhoea 6 days before death. Diagnosis—Infection unknown origin. D.C.—Toxaemia and infective enteritis.
- No. 241.** M. 5th child aged 15 weeks. F.T.N.D. B.W. 6 lbs. 2 ozs. Admitted to hospital on 6th day, septic eyes and cord, later paronychia and skin sepsis, weight at 12 weeks was 7 lbs. 12 ozs. Never thrived and finally died, apparently suddenly. Diagnosis—Pyogenic infection from neo-natal period. D.C.—Malnutrition and Inguinal hernia.
- No. 242.** M. 1st child aged 31 days. F.T.N.D. B.W. 5½ lbs. B.F. only few days. Seen at Welfare clinic and mother had a "fixed idea" that the child was suffering from tongue-tie. Tongue cut and four days later child found dead in bed. Reported to coroner but not enough evidence to classify. Doctor's deposition—Asphyxia due to inhalation of mucus or vomit due to gastro-enteritis.
- No. 243.** M. 1st child (illeg.) aged 4 days. F.T. B.W. 7 lbs. 9 ozs. Very difficult forceps delivery, 3rd day poor colour and rapid breathing, death following day. Diagnosis—Birth-death. D.C.—Cerebral haemorrhage, forceps delivery.
- No. 244.** F. 2nd child (illeg.) aged 16 weeks. F.T.N.D. B.W. 5 lbs. 10 ozs. Was in institutional nursery. Several infants had diarrhoea (Flexner dysentery) and this infant had illness with a long course lasting 30 days. Diagnosis—Alimentary infection. D.C.—Gastro enteritis.
- No. 245.** F. 3rd child aged 23 weeks, never breast fed. Did not thrive and terminal illness lasted 1 week with diarrhoea followed by a convulsion. Diagnosis—Acute infection of unknown origin. D.C.—Gastro-enteritis.

- No. 246.** M. 1st child aged 1 day. F.T.N.D. Looked healthy at birth but became cyanosed and died in a convulsion. Diagnosis—Birth-death. D.C.—Convulsions, congenital toxic myocardial failure.
- No. 247.** M. 2nd child aged 15 weeks. F.T.N.D. B.W. 7 lbs. 5 ozs. B.F. 10 days then weaned and at 2 months weighed only 7 lbs. 8 ozs. During a long stay in hospital the child failed to thrive, nothing definite was found, finally had a temperature 100°-101° and death in 48 hours. Diagnosis—Infection unknown origin. D.C.—Marasmus.
- No. 248.** M. 6th pregnancy, child aged 25 weeks. B.W. 7½ lbs. B.F. 3 weeks. Thrived till 11 days before death when it had a cold which rapidly developed into acute bronchitis and consolidation. Later given M. and B. 693 and appeared to improve but on 11th day had convulsions and death followed. Diagnosis—Acute respiratory infection. D.C.—Broncho-pneumonia.
- No. 249.** F. 2nd child aged 2 days. Mother had ante-partum eclampsia, rapid spontaneous delivery of a premature child. B.W. 2 lbs. 3 ozs. Cyanosed, unable to suck and died at 50 hours. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 250.** F. 1st child aged 4 days. Ante-natal treatment sought by patient. Mother sent into hospital after 50 hours labour : contracted pelvis impaction of head and great moulding, delivered by Caesarean section and forceps. Asphyxia at birth, sucked well but cerebral cry and increasing drowsiness and cyanosis till death on 4th day. Diagnosis—Birth-death. D.C.—Atelectasis.
- No. 251.** F. 10th pregnancy twin to No. 260 (illeg.) premature not weighed. B.B.A. no assistance called for 2 hours. Insufficient evidence to classify but possibly due to neglect at birth. D.C.—Pulmonary atelectasis.
- No. 252.** F. 1st child aged 7 days. Premature birth. B.W. 3 lbs. 7 ozs. Child feeble and died shortly after birth. Mother ill (pyelonephritis). Diagnosis—Prematurity. D.C.—Prematurity.
- No. 253.** F. 13th child aged 9 days. F.T. B.B.A. Not weighed. B.F. at birth was healthy and thrived till 7th day. Then stools were loose and offensive and on following day child was dehydrated and died. Two other children diarrhoea at same time. Diagnosis—Acute alimentary infection. D.C.—Gastro-enteritis.
- No. 254.** F. 2nd child aged 3 days. F.T.N.D. B.W. 6 lbs. 12 ozs. Gross congenital abnormality hydrocephalus and myelocoele incompatible with life. Diagnosis—Congenital defect. D.C.—Congenital myelocoele and hydrocephalus.
- No. 255.** M. 1st child aged 40½ weeks. F.T.N.D. B.W. 6 lbs. 14 ozs. B.F. for 6 months. Thrived well till 10 days before death then vomiting and diarrhoea and malaise. Tuberculous meningitis with miliary tuberculosis proved at autopsy. Mother had open pulmonary tuberculosis. D.C.—Tuberculous meningitis.
- No. 256.** F. 1st child aged 9 weeks. F.T.N.D. B.W. 7½ lbs. B.F. 8 days. Thrived till 4 days before admission when vomiting started, admitted distended with acute intestinal obstruction due to peritoneal band. Operation but death from paralytic ileus. Diagnosis—Congenital deformity. D.C.—Generalised peritonitis. Strangulated small intestine.
- No. 257.** M. 1st child aged 5 minutes. F.T.N.D. B.W. 7 lbs. 14 ozs. Long first stage child born in asphyxia pallida and lived only 5 minutes. Ante-natal centre records showed that pelvis was 'under average' but no special arrangements were made. Diagnosis—Birth-death. D.C.—Atelectasis.

- No. 258.** M. 1st child aged 1 day. Premature B.W. 4 lbs. 1 oz. No difficulty at birth but child feeble and oedematous. Died in 24 hours with generalised oedema. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 259.** F. 7th child aged 6½ weeks. B.B.A. B.W. 9 lbs. Seen by doctor when moribund but had cold for 3 days. Diagnosis—Acute respiratory infection. D.C.—Infantile convulsions, capillary bronchitis.
- No. 260.** F. Twin to No. 251. Aged 1 day. This child was found dead, probably overlain. Inquest Asphyxia, overlain accidental, lack of attention immediately after delivery.
- No. 261.** F. 2nd child aged 47 weeks. F.T.N.D. B.W. 8¼ lbs. Never thrived and at 5 months had pertussis and varicella, first attended clinic 8 days before death and was in poor general condition. 3 days later became ill with a respiratory infection which caused death on 5th day. Diagnosis—Acute respiratory infection. D.C.—Broncho-pneumonia.
- No. 262.** F. 1st child aged 7 days. F.T.N.D. B.W. 6½ lbs. Child never sucked and died in convulsions on 7th day. Diagnosis—Birth-death. D.C.—Birth trauma, cerebral haemorrhage.
- No. 263.** M. 2nd child aged 1 day. Premature child. B.W. approx. 3 lbs. Brow presentation and difficult labour, never sucked or cried in the normal manner. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 264.** F. 4th child aged 30 minutes. F.T.N.D. Congenital abnormality spina bifida incompatible with life. D.C.—Spina bifida, macerated skull.
- No. 265.** F. 1st child aged 7 days. Premature child. B.W. about 2 lbs. Lived for 7 days becoming progressively more and more feeble. Diagnosis—Prematurity. D.C.—Atelectasis and premature birth.
- No. 266.** M. 2nd child aged 6 weeks. B.F. F.T.N.D. B.W. 6 lbs. 2½ ozs. Congenital deformity spina bifida with a secondary meningitis. D.C.—Meningitis; congenital meningo-myclocele and hydrocephalus.
- No. 267.** F. 1st child aged 23 weeks. F.T.N.D. B.F. 1 month only but thrived well; had a 'cold' with respiratory symptoms for a day or so and was found dead in bed. Reported to coroner. Diagnosis—Acute respiratory infection. Doctor's deposition, convulsions.
- No. 268.** F. 2nd child aged 1 day. B.W. 5 lbs. 9 ozs. Child cyanosed at birth and died in an attack of cyanosis. Autopsy—Tentorial tear with effusion of blood. Diagnosis—Birth-death. D.C.—Cerebral haemorrhage and birth trauma.
- No. 269.** F. 5th child aged 1 day. Premature child. B.B.A. B.W. 2½ lbs. Difficulty in swallowing and death in 22 hours. Diagnosis—Prematurity. D.C.—Prematurity.
- No. 270.** F. 1st child aged 9 days. Never B.F. F.T. High forceps after a long labour, on 4th day green stools and vomiting. On 8th day child dehydrated and death followed next day. Not enough evidence for classification. D.C.—Enteritis and convulsions.
- No. 271.** F. 5th child aged 33 days. F.T.N.D. B.W. 8 lbs. Child "off colour" for a few days, found dead in bed. Not enough evidence for classification. D.C.—Infantile convulsions due to gastro-enteritis.
- No. 272.** F. 1st child aged 26 hours (illeg.) F.T. Maternal and foetal distress. Child alive and feeble at birth in condition of asphyxia pallida. Never recovered and died in 26 hours. Diagnosis—Birth-death. D.C.—Atelectasis.
- No. 273.** F. 9th child aged 32 weeks. F.T.N.D. 8 lbs. 1 oz. at 3 weeks. B.F. only 3 weeks. Apparently thrived till 3-4 days before death when child developed a "cold" and then an acute respiratory illness. Diagnosis—Acute respiratory infection. D.C.—Convulsions and broncho-pneumonia.

